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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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U.S.A. and European Chemical Trusts

By the courtesy of the American Department of Commerce we have received a verbatim transcript of two extremely interesting speeches delivered at the Chemical Industries Dinner lately held in New York. The principal speakers were Mr. C. C. Concannon, chief of the Chemical Division of the Department of Commerce, and Colonel W. J. Donovan, a distinguished legal authority, whose work has been largely in what is known as the anti-trust field, and has brought him into direct contact with potash and other chemical interests.

The principal speech was that of Colonel Donovan, but Mr. Concannon in introducing him made some observations of direct concern to European chemical interests. The need for increasing America's exports of chemicals, he said, was becoming more insistent and the difficulty of obtaining a share of the world's markets was becoming greater. The ratio of total American chemical production to the amount exported was too low in his estimation and he recommended that extra efforts should be devoted to expanding sales abroad. Foreign competitors, he added, had been making strenuous efforts during the past few

years to establish and consolidate themselves in this respect. Chemical producing countries had adopted programmes of centralisation, with subsequent international alliances. The most recent development of this character occurred on May 1, when there came into effect the tripartite dye cartel including German, French and Swiss producers, the effects of which Mr. Concannon predicted would undoubtedly be reflected in increased severity of competition in the world markets. In particular, he emphasised that British chemical interests, through Imperial Chemical Industries, Ltd., had been making strenuous efforts to facilitate Latin-American trade through the establishment of subsidiary or allied companies in various South American countries. "Latin-America," he said, "is a logical customer for our chemical products, yet we are facing keen rivalry in that part of the world and even keener competition in the vast potential markets of the Far East."

The Potash and Quinine Cases

ALL this, of course, is of great interest to British chemical producers and exporters, but Colonel Donovan's statement touches the matter even more closely. He announced that at a conference last year between the American chemical industry and the Department of Commerce, representations from the industry for the amendment of the anti-trust laws were under discussion. The avowed reason was fear of threatened competition from the European chemical industry, with their organised cartels and combinations with power to regulate prices and production. At that time his view was that such a course would in effect be a surrender to the Continental principle of trade, which would result in greater regulation and control of industry by the American Government, with resultant restriction and hampering of individual initiative. His view has not changed. On the contrary, events last year have fortified it. He holds that to some extent it has been demonstrated that foreign monopolies or foreign cartels, when they enter the United States to carry on their business operations, must recognise that the principles of the anti-trust laws may be made binding upon them.

In the Sisal case, decided by the Supreme Court in 1927, for the first time the provisions of the Wilson Tariff Act were made applicable to a monopoly which existed under the laws of a foreign nation and which in some respects was conducting its sales operations in the United States. Since that decision the principles enunciated had been applied in two suits. One was the so-called "Quinine case." That affected certain foreign defendants who, controlling 90 per cent. of the world's supply of cinchona bark out of which quinine and its derivatives are manufactured, sought to fix the prices, terms, and conditions on which all

manufacturers and consumers of cinchona bark and quinine derivatives could procure, ship, sell, and resell the product in the United States. At first the foreign defendants, over whom the United States had no jurisdiction, resented the action and resisted any attempt to have their operations in the United States subjected to the principles of the anti-trust laws. But in the end they submitted to a decree of the Court forbidding them from doing the acts complained of.

The other case was the Potash case. In substance, the complaint alleged that the defendants, one group representing French interests and the other German interests who previously competed with one another in the American market, had entered into an agreement to form a single exclusive selling agency in the United States for the purpose of discriminating against the American purchaser. The French defendants asked for a dismissal of the petition on the ground that since the stock in the French company was largely owned by the French Republic, the corporation was an instrument of the French Government and entitled to immunity. The District Court rejected this contention and held that when a government enters into a commercial enterprise it cannot claim sovereign immunity for the corporation which it controls. Subsequent to this decision, representatives of all of the defendants visited America and submitted to a decree of the Court which required them to conform to the principles of the anti-trust laws in the distribution of potash salts in the United States. Those two cases were terminated by the entry of consent decrees.

The I.G. Dyes Company

WHILE the subject-matter of these two cases, quinine and potash, may be said to be the subject of natural monopolies, inasmuch as neither of these two materials is produced in substantial quantities in the United States, Colonel Donovan's view is that the principles of the anti-trust laws are equally applicable to foreign monopolies having to do with materials more actively competitive with materials produced in the United States.

Exceptional consideration, Colonel Donovan states, was given by Congress in the tariff to the importation of chemicals, because of the fact that the chemical industry is a key industry. This special consideration was necessary because of the American experience in being subjected to a foreign monopoly over dyestuffs which had been maintained by "ruthless commercial methods." The war made America, like Great Britain, realise that they had to develop a domestic coal-tar dye industry, not only for dyestuffs, but also for medicines and high explosives. That these measures of defence, Colonel Donovan claimed, had evidenced their potency was seen by the coming to America of the so-called I.G. Dyes. It was understandable, he added, that there should be objections raised to this concern entering the United States. Perhaps the bitterness of the war was not entirely forgotten. But when, as in this case, the foreign corporation erected plants and invested capital in America, then its operations and the acts of its executives became subject to American laws, and for the purpose of applying the principles of the Sherman Act they were in a much better position to deal with the foreigners

than if they remained entirely abroad and projected themselves into American territory from foreign soil.

It would also, he allowed, be unfair to deny to foreigners in America the right that American citizens were asserting in other countries. "We cannot expect," he said, "to establish plants owned by American capital in foreign countries for the better distribution of surplus production abroad and at the same time undertake to exclude foreigners from establishing plants and distributing agencies here. Many of our industries have hurdled the customs barriers of other countries, and subjected themselves to their laws and have set up plants within the walls. International Harvester, American Radiator, General Electric, General Motors, and Ford, together with others, have done this. It has been done for practical business reasons. We can hardly deny this right to those who, because of business advantages to them, are willing to subject themselves to the requirements of our laws."

Incidentally Colonel Donovan disposed of the popular theory that it is the mere size of a trust that in America brings it within American law. On the contrary, it is the public effect of the trust that really counts. "I do not," he stated, "undertake to pass judgment upon the business wisdom or legal validity of large mergers. But there is, of course, a limit to which you may go in this direction. The law recognises that competition may be carried to an extreme, that it may produce economic effects dangerous to society. It is believed that consolidation may in some degree correct the evils of destructive competition and that it represents an effort to adjust the relations between production and consumption, supply and demand. It is when these consolidations attempt to eliminate competition, to enhance existing prices, and to exercise permanent control in the industry that they constitute violations of the law."

We have quoted these views at some length because of the interest of the American attitude to Europe in relation to chemicals and also to show how fully they confirm the indication of that attitude that we ventured to give when the news of the I.G. "invasion" of America was recently announced.

Books Received

- POLAR MOLECULES. By Dr. P. Debye. New York: The Chemical Catalog Co. Inc. Pp. 172.
 THE CHEMISTS' YEAR BOOK, 1929. By F. W. Attack. Manchester: Sherratt and Hughes. Pp. 1185.
 GLUE AND GELATINE. By Paul I. Smith. London: Sir Isaac Pitman and Sons, Ltd. Pp. 162. 8s. 6d.
 REPORT OF TEST BY THE DIRECTOR OF FUEL RESEARCH ON THE MACLAURIN PLANT INSTALLED AT DALMARNOCK GAS WORKS, GLASGOW. London: H.M. Stationery Office. Pp. 26. 9d.

The Calendar

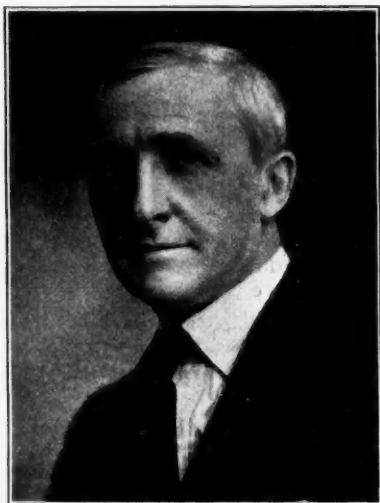
June 19	Society of Glass Technology. 2.30 p.m.	Sheffield.
20	Chemical Society. 8 p.m.	Burlington House, London.
26	British Chemical and Dyestuffs Traders' Association: Annual General Meeting. 2.30 p.m.	London.
28	Imperial Chemical Industries, Ltd.: Opening of the I.C.I. Agricultural Research Station. 12 noon.	Jealott's Hill, Maidenhead.

The Rt. Hon. Wedgwood Benn

New Secretary of State for India

THE appointment of the Right Hon. Wedgwood Benn, P.C., M.P., to the responsible post of Secretary of State for India in the new Labour Government is one, quite apart from political considerations, of great personal interest. He is the second son of the late Sir John Benn, the founder of the firm of Benn Brothers, Ltd., and the younger brother of Sir Ernest Benn, the present head of the firm.

It is now nearly 25 years since Mr. Benn was associated in any active capacity with Benn Brothers, Ltd. In the early 'nineties, after a distinguished academic career culminating in his becoming B.A. of London with first place in honours and later a Fellow of University College, he joined the staff of *The Cabinet Maker*, the journal established by his father, the late Sir John Benn, and later acted for a time as editor of that paper. From 1897, for three or four years, he edited and managed a magazine of home decoration, *The House*, which was the pioneer in a field which is now well supplied with popular magazines. He was appointed a director of Benn Brothers, Ltd., in 1906, and remained a member of the board after he entered Parliament in that year. In 1910, however, in



RT. HON. WEDGWOOD BENN, P.C., M.P.

obedience to the self-denying ordinance which Mr. Asquith imposed upon his ministers, Mr. Benn resigned his position as a director of the company, and thus ended his work in connection with it. He is a large shareholder.

Mr. Benn's appointment to the highest Cabinet rank is a fitting recognition of his long experience of public and political work. He represented St. George's Division of the Tower Hamlets as Liberal from 1906—1918, when, owing to his refusal to accept the "Lloyd George coupon," he left St. George's and accepted an invitation to fight Leith, also in the Liberal interests. For the following nine years he was the member for Leith, until in 1927 he joined the Labour party and resigned his seat. A few months later he successfully contested North Aberdeen and re-entered Parliament as a Labour member. Some time ago he spent an extended holiday in the Near East and at the invitation of the Russian Government visited that country and investigated its conditions.

Mr. Benn has enjoyed a wide experience in matters of Government, having served in every Parliamentary grade from private secretary upwards. He was a Junior Lord of the Treasury from 1910 to 1915; he acted as representative of H.M. Office of Works in the House of Commons from 1912 to 1914, and of the Insurance Commission in 1914. On the outbreak of war, Mr. Benn was appointed first chairman of the National Relief Fund, but after a few months of this arduous work declined to remain in a civil position, and joined the Middlesex Yeomanry as an interpreter. He served with the Yeomanry in Egypt and Gallipoli in 1915, transferred to the

R.N.A.S., where he acted as observer, and in 1916 did a good deal of flying on the Turkish front. He was shipwrecked in the *Ben-my-Chree*, the old Isle of Man steamer, which was sunk by the Turks in 1917. Transferred for a time to Gallipoli, he took part in the capture of Chocolate Hill, from where he was invalided home. It was in this connection that he made the only use during the whole period of the war of his position as a Member of Parliament. He succeeded in breaking through the forms and ceremonies, landing at Malta instead of going home, whence he found his way back to active work in Egypt. From November, 1917, to September, 1918, he was flying on the Piave and Asiago fronts, having, at the age of 42, secured his certificate as a pilot.

Mr. Benn holds the 1914-15 Star, the D.S.O., and the D.F.C. for flying services; the French Government awarded him the Legion of Honour and Croix de Guerre, and he also wears the Italian Bronze Medal for valour and the Italian War Cross.

Low Temperature Carbonisation Test

Fuel Research Department Test of Maclaurin Plant

THE Department of Scientific and Industrial Research has been empowered to make tests at the public expense of plants for the low temperature carbonisation of bituminous coal. A report just issued describes a test of one unit of the Maclaurin plant erected at the Dalnarnock Gas Works of the Glasgow Corporation. ("Report of Test by the Director of Fuel Research on the Maclaurin Plant installed at Dalnarnock Gas Works, Glasgow," published for the Department of Scientific and Industrial Research by H.M. Stationery Office, pp. 26, 9d.)

The plant consists of five units of a rated capacity of 20 tons of coal a day each. The units are perhaps more accurately described as "producers" rather than as "retorts." The body of each is 20 feet high, square in cross-section, with a maximum width of 8 feet 3 inches at a point 15 feet from the top, tapering to 6 feet at the top and 6 feet 6 inches at the bottom. The coal is carbonised by the heat produced by the combustion of a portion of the coke, air being admitted about the centre of the producer, and steam at the bottom. One effect of this is that the tars are given off, in the upper and cooler portion of the producer, at temperatures corresponding to those generally used in so-called "low" temperature carbonisation, but the coke then passes through a zone of higher temperature before discharge. Another effect is that the volume of gas produced is much greater, but its calorific value much lower, than is the case with externally heated retorts.

The plant worked smoothly during the test, and the throughput and yields claimed were attained. The coal used in the test was of a medium caking variety, and the coke produced was of approximately the same size as the coal charged, little agglomeration and only slight disintegration having taken place. The coke was quite suitable for domestic purposes, including burning in open grates.

Chemical Overseas Trade

Continued Advance in Exports

THE Board of Trade Returns for May, published this week, show a continued advance in the overseas trade in chemicals, drugs, dyes and colours.

For the month of May the imports are £1,342,387, an advance over the corresponding month of last year of £35,933; the exports are £2,457,061, an increase of £98,485; and the re-exports £70,062, a decrease of £20,172.

For the first five months of this year the imports are £6,721,180, an increase over 1928 of £28,034; the exports £10,899,461, an increase of £259,069; and the re-exports £361,561, a decrease of £43,985.

Spanish Production of Chemicals

SPANISH PRODUCTION OF CHEMICALS in 1927 is given as follows:—Nitric acid, 1,007 tons; superphosphate, 843,160 tons; hydrochloric acid, 1,256 tons; ammonium sulphate, 17,194 tons; sodium sulphate, 7,922 tons; white lead, 1,598 tons; copper sulphate, 5,859 tons; soda, 37,993 tons; sodium bicarbonate, 3,283 tons; barium chloride, 248 tons; sodium sulphide, 248 tons; bleaching powder, 6,232 tons; red lead, 785 tons; explosives, 8,239 tons; caustic soda, 32,827 tons; alum, 60 tons; benzol, 9,014 tons; naphthalene, 704 tons; and lithopone, 625 tons.

The Exploitation of the Dead Sea.—(I)

By I. Melamede

We are indebted to the editor of "Discovery" for his kindness in permitting us to republish the following article from his journal. The author was until recently a member of the technical staff of the Palestine Government and is therefore in a position to speak on the subject with authority. The article will be followed shortly by a second one dealing with the financial and transport aspects of the subject.

THE Dead Sea has all the characteristics of the land in which destiny has placed it. Located in probably the most inhospitable region in the world, climatically and otherwise, it lies in a depression of 1,300 feet, the lowest site in the world. Its name was symbolical of the earthly Gehenna, the favourite habitat of Pluto, yet it is now to turn into a sea of life, a paradise of diligence and activity. Already the Dead Sea has engaged the attention of many experts in many fields, it has given anxious thoughts to diplomats, and gigantic concerns on both sides of the Atlantic have sent their best scientific and economic advisers to report on its potentialities. Yet, while there is obviously a full appreciation of its economic

Later, Josephus, our authority on conditions in the Holy Land during the rise of Christianity, gives it the honourable appellation of a "Sea of Asphalt."

In the Middle Ages the Crusaders were not ignorant of its commercial properties; and some centuries later, before 1850, scientific expeditions had begun to be organised to the Dead Sea, the most productive of which were those of an American named Lynch, the Englishmen Wilson, Hull and Martin, the Frenchmen Luynes, Lartit and Gautier, and last but not least that of the Germans, Schmidt and Blanckenhorn. Until recently, Blanckenhorn was our authority for such knowledge as we then possessed of the chemical wealth of the Dead Sea, for until his days all were more interested in studying it as a remarkable geological phenomenon, with its unique depression, its inhospitable climate and legendary past. Little



THE DEAD SEA. THE MOUNTAIN OF SALT, NAMED AFTER SODOM, WHICH TRADITION HAS PLACED ON THE SHORES OF THE DEAD SEA.



THE RIVER JORDAN: A VIEW OF THE RIVER AND ITS ARID BANKS, TAKEN NOT FAR FROM THE POINT AT WHICH IT ENTERS THE DEAD SEA.

value, a consensus of opinion on its approximate worth can hardly be said to exist.

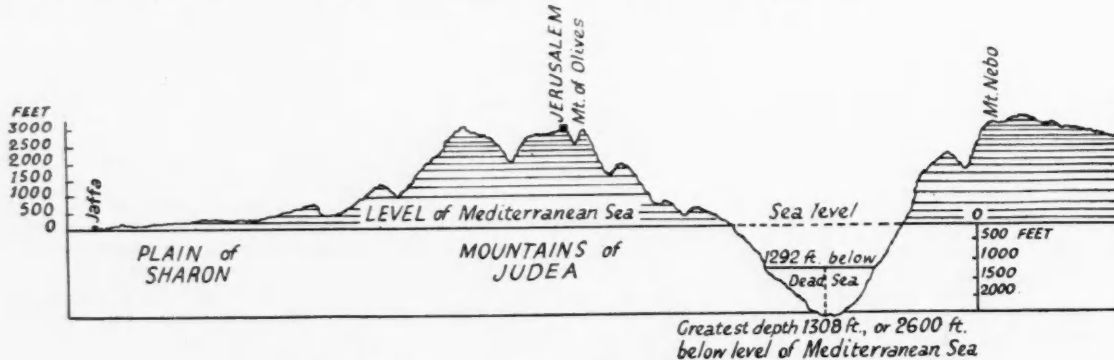
Mr. Ormsby Gore, the late British Under-Secretary of State for the Colonies, has aptly termed the exaggerated expectations as being based on "astronomical" figures; the German experts, on the other hand, are sceptical, or at least reserved. But, paradoxical though it may seem, the truth is on both sides, as will be seen from an analysis of the immediate antecedents of the Dead Sea Concession.

Historical Associations

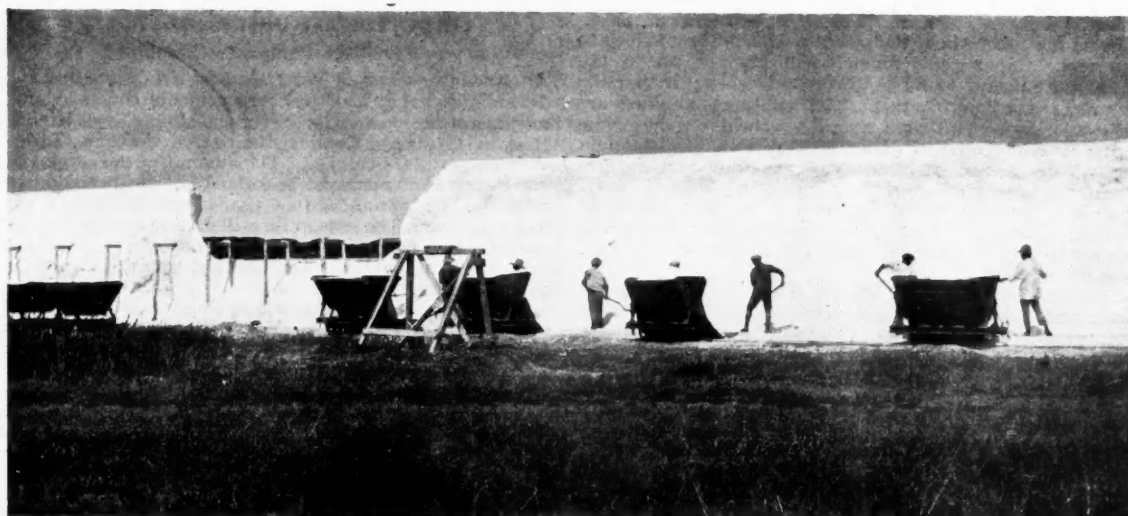
Of course, the Dead Sea is a household word to all students of the Bible. Ezekiel (xlvii, 9-12) has a few graphic sentences about the sterility and barrenness of the water, which gives no breathing chance to either fish or vegetation, and which turns all animal matter into colossal and endless masses of salt.

wonder that there are few chemical references in the literature of the past.

Then came the Great War and the British Occupation, with their tremendous upheavals and their everlasting impress upon the destinies of the Holy Land. With the advent of British troops under General Allenby in 1917 the investigation of the Dead Sea resources became an actuality. Two officers studied the question on the spot early in 1918—Major Brock, director of the Geological Survey of Canada, and Major Tulloch, who has recently been much in the limelight as the partner of Mr. Novomeysky in this tremendous concession. Mr. Novomeysky, a mining engineer from Siberia with an enviable scientific and business record, had foreshadowed important possibilities on his first visit to Palestine in 1911, when he subjected the contents of the Dead Sea waters to a minute chemical analysis.



SECTIONAL MAP OF PALESTINE, EAST TO WEST, SHOWING LEVELS INVOLVED.



SALT FROM THE SEA : WORK IN PROGRESS ON SALT EXTRACTED FROM THE MEDITERRANEAN SEA WATER, AT ATHLIT, THE JEWISH COLONY NEAR HAIFA.

The Concession

Not until 1925, however, was the question of the grant of the concession, as distinct from the survey and chemical research, a topic of serious discussion in the Foreign Offices as well as in Parliaments. A report published in that year by the Crown Agents for the Colonies in England, entitled "Production of minerals from the waters of the Dead Sea," contained the results of experiments made on the Dead Sea shore by the geological adviser to the Palestine Government, and of chemical tests made in London, as well as the findings of an economic committee officially formed under the Senior Crown Agent, Sir Henry Lambert. It was on the basis of findings contained in these valuable documents that the Colonial Office invited tenders. Four were received, all of which were definitely rejected. The small number of tenders is explained by the immaturity of the problem at that time, but only a year later, in 1926, four further tenders were received. Of these, a combined one submitted by Mr. Novomeysky and Major Tulloch was found to be the most acceptable, and was singled out for examination.

[As readers of this journal are aware, the concession has been awarded to Messrs. Novomeysky and Tulloch. Details are given in THE CHEMICAL AGE, May 25, p. 488; and May 11, p. 446.]

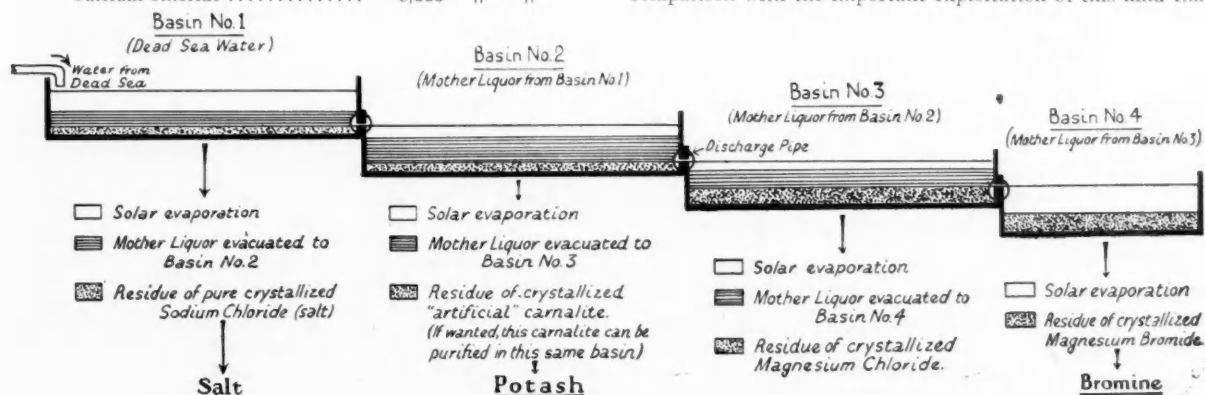
What exactly is the mineral wealth of the Dead Sea? According to Major Brock's report, by far the most authoritative from the chemical standpoint, its waters contain the following:—

Potassium Chloride	2,000 million tons
Magnesium Bromide	980 " "
Sodium Chloride (Salt)	11,900 " "
Magnesium Chloride	22,000 " "
Calcium Chloride	6,000 " "

In common parlance, it may safely be said that the supply of potash is inexhaustible. Now these figures may sound exaggerated, but they are not themselves "astronomical" in the sense that the late Colonial Under-Secretary would have us believe. No doubt the economic inferences may be astronomical, as will be shown later. For when a responsible member of the British Parliament valued those resources at the ludicrously high figure of £14,000,000,000 (fourteen milliard pounds) it exhausted Mr. Ormsby Gore's patience and induced him to use the term. It is one thing to state or estimate the chemical and mineral resources; it is quite a different thing to translate their commercial value into pounds sterling. This commercial value depends on such considerations as transport, world competition, and market fluctuations.

The unique geographical situation of the Dead Sea—in the lowest depression in the world—puts the area in a most favoured position as regards the extraction of its numerous resources, as well as the industrial exploitation of the salts it contains. Here are combined incalculable masses of raw materials with natural plant and natural machinery close at hand, for it is, if one may put it so, an immense plant, the machinery of which is already in being in the form of natural means. On the one hand there is the Dead Sea, a receptacle of the dissolution of an enormous quantity of salts; on the other there are the gleaming rays of the sun, which evaporate daily 156,000,000 cubic feet of water that pour into the sea from the Jordan. This river itself, by no means large but unquestionably powerful, is there to give the pure water necessary to treat and purify all those salts that will be created by evaporation.

It will not be amiss in this connection to draw a brief comparison with the important exploitation of this kind that



DIAGRAMMATIC PLAN SHOWING THE FOUR STAGES PROPOSED FOR EVAPORATING THE SEA WATER.

is effected daily at Stassfurt. Potash is extracted at Stassfurt from the substrata of the soil at a depth of from 1,000 to 3,250 feet. Impure and rough when brought up to the surface, the mineral found is dissolved to pass through the first processes of purification. The solutions obtained are then evaporated. This preliminary treatment produces the carnallite which contains about 20 per cent. of potassium chloride, the rest being magnesium chloride and sodium chloride. A large portion of the product is sold in the open market as a fertiliser containing from 16 to 20 per cent. of potassium chloride. The rest is dissolved once more, and converted to a richer product containing from 75-85 per cent. of potassium chloride.

As regards the process at the Dead Sea, a glance at the climatic and geological features will convince anyone how advantageous are the conditions there as compared with those at Stassfurt. For the heat of the sun will be the principal agent of the immense work that is to be done. The heat is such that 125 gallons of water are evaporated daily per square yard of surface—an evaporation which is two and a half times as intensive as that obtained on the Palestinian coast of the Mediterranean Sea.

Electric pumps will draw the water from the Dead Sea, and manual work will only be required to pack, transport, and despatch the masses of salt produced in the course of the different operations performed. The water will be drawn from a depth of some 250 feet, as chemical tests have proved that there the water contains 332 grams of salts per litre.

Immense concrete basins will serve as reservoirs for the water thus drawn by the pumps. These basins, up to 820 feet in length, will be filled with Dead Sea water up to a height of 3½ feet. The sun will then begin its task of evaporation. Within a relatively short time, say, fifty or sixty days, the bulk of the sodium chloride will have been deposited at the bottom of the basin. The water which covers the deposits of salts (the mother liquor) will be allowed to flow into a second basin, or rather into a chain of basins identical with the first, where it will be subjected to a further evaporation. The product obtained from the first process is very pure sodium chloride.

At the end of thirty or forty days the evaporation in the second basins deposits the potassium chloride contained in the water as artificial carnallite, containing some 20-22 per cent. of pure potassium chloride. The salts left in the mother liquor are magnesium chloride and bromide. The mother liquor of this second evaporation will flow into a third series of basins. Evaporation will here deposit the magnesium chloride, and the surplus water—evaporated a fourth time in small basins—will contain magnesium bromide, which will be finally treated with a view to the production of bromine.

Once completed, the same series of operations will repeat itself. It has been experimentally proved that no fewer than four complete cycles of evaporation may be obtained annually, but these tests, necessarily made with small quantities, cannot be regarded as in any way conclusive. In the writer's opinion three cycles will be ample, with a remarkable result unequalled by anything that has been so far obtained elsewhere. Considerations of price and marketing of the products will be considered in a later article.

French Tar Production

OFFICIAL statistics state that tar production in France in 1928 amounted to 516,000 tons, as compared with 487,000 tons in 1927 and 465,000 tons in 1926. Of the total, gasworks supplied 104,000 tons and coke ovens 283,000 tons. The coke oven production showed an increase, that of the gasworks a slight decrease. It may be assumed that, with the growth of the French coal-distillation industry, coke oven production of tar will greatly increase in future years. The production of the Saar region in 1928 was 128,000 tons, as compared with 116,000 tons. France imported from Germany 44,000 tons of special tar for road construction. The total amount of tar at the disposal of French industry was 587,000 tons, of which 317,000 tons (a decrease on the previous year) were distilled and 239,000 tons (an increase of 57,000 tons on the previous year) were used in road-making. 31,000 tons were exported or applied to miscellaneous purposes. French tar distillers are beginning to make headway against German imports, from which it may be inferred that the French tar industry is undergoing great development.

Important Australian Merger

Fertiliser Companies Combined

An account is given in *The Industrial Australian and Mining Standard* for May 2 of the arrangements concluded for the merging of the chemical works of the Mount Lyell Mining and Railway Co., Ltd., Cuming, Smith and Co. Pty., Ltd., and Wischer and Co. Pty., Ltd. The amount of the capital of the amalgamated company to be formed has not been announced officially, but it is understood that it will be from £4,000,000 to £5,000,000. The enterprise will have an output of superphosphates of approximately 300,000 tons annually for Victoria and Riverina, but as requirements increase a much larger quantity can be manufactured.

A rumour (states the Australian journal) has associated the chemical works of Nobel (Australasia), Ltd., with the amalgamation, and there is nothing to prevent that concern from linking up with the new organisation. Should it do so, the amalgamated company will be able to act with the technical department of Nobel's concern. As the controlling interest in Cuming, Smith and Co. Pty., Ltd., and Mount Lyell Fertilisers, Ltd., in Western Australia is held by the Melbourne companies of Cuming, Smith and Co. and the Mount Lyell Co., it is possible that steps will be taken to bring the West Australian company within the folds of the amalgamated group. It has been stated that Imperial Chemical Industries, Ltd., has been discussing the question of joint enterprise in respect to the manufacture of nitrogen products in Australia. The merger now announced suggests the possibility of such action, and it would, in that case, be the first step in the direction of association with the great British company. Nobel's (Australasia), Ltd., already is linked with the British organisation.

The Constituent Companies

The companies which have amalgamated have been in existence for a number of years. The oldest established fertiliser company in Victoria is Cuming, Smith and Co. Pty., Ltd., which has been manufacturing fertilisers for fifty years. It has a turnover of about 130,000 tons of superphosphates annually. Apart from its interest in the West Australian company, it controls the Adelaide Chemical Works.

Wischer and Co. Pty., Ltd., has been a leading fertiliser company for more than thirty years, and its output at present is about 50,000 tons a year.

The chemical works of the Mount Lyell Mining and Railway Co. were established in 1904, and manufacture was begun in 1905. The works were established primarily to exploit the pyrites deposits at the company's mine in Tasmania. The fertiliser plant had a capacity of 20,000 tons a year, but within two years of its commencement it had to be duplicated. The works are now capable of producing more than 100,000 tons of superphosphate annually. In 1908 the company erected works at Port Adelaide, with a capacity of 25,000 tons a year. To avoid overlapping in construction work, etc., an amalgamation of that branch with the Wallaroo Phosphate Co. in 1914 brought into being Wallaroo-Mount Lyell Fertilisers, Ltd. In 1910 the company's interests were extended to Western Australia, and in 1911 the works at North Fremantle, with an output of 25,000 tons, were in operation. Subsequently, farmers in that State were invited to become shareholders, and in 1927 Mount Lyell Farmers' Fertilisers, Ltd., was formed. In June of last year an amalgamation in Western Australia of Cuming, Smith and Co.'s enterprise and the Mount Lyell Co.'s works was effected, and a new company, Cuming, Smith and Mount Lyell Fertilisers, Ltd., was established.

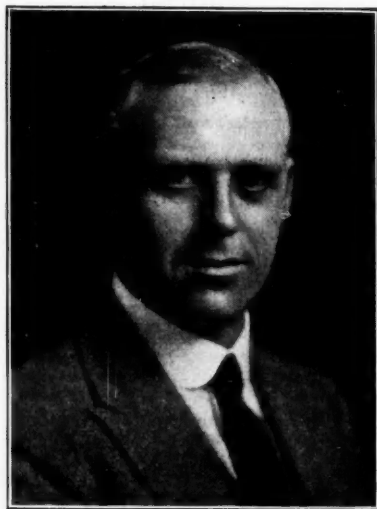
Manufacture of Sulphuric Acid in Canada

ACCORDING to a recent report, a large plant is shortly to be established in Northern Ontario for the manufacture of sulphuric acid from smelter fumes. In this connection it is of interest to note that during the year 1928 Canadian sulphuric acid plants produced 96,227 tons of 60 degrees Béaume sulphuric acid, valued at \$1,077,836, as against 98,470 tons worth \$1,172,507 in 1927. Exports of sulphuric acid from Canada amounted to 13,329 tons worth \$152,544 in 1928 as against 17,407 tons worth \$191,926 in the previous year; practically all of the acid was shipped to the United States. Imports totalled only 55 tons worth \$8,652 in 1928, and 53 tons worth \$8,548 in 1927.

Mr. H. J. Pooley

New Secretary of the Society of Chemical Industry

MR. HENRY JEFFERIES POOLEY, who (as briefly announced in THE CHEMICAL AGE of last week) has been appointed Secretary of the Society of Chemical Industry, was born in 1877 at Egremont, Cheshire. He was educated at Cambridge House School, Liscard (1883-5), and afterwards at Wallasey Grammar School (1885-93), from which he secured a scholarship tenable at University College, Liverpool. Mr. Pooley was a brilliant student, and at the same time excelled in athletic pursuits, and both these characteristics he continued to exhibit during his college career at what is now the Liverpool University (1893-98). He had a particular leaning towards scientific subjects, and had the distinction of being the first student of chemical engineering in the Liverpool University. On the athletic side, Mr. Pooley secured many notable successes on the running track, in boxing bouts, and particularly in Rugby football, playing with many of the famous teams in the district. His collection of cups and similar trophies won in the wide range of athletic pursuits in which he indulged is unusually large, and tells a most interesting story of his prowess.



MR. H. J. POOLEY

Mr. Pooley was early attracted to the possibility of motoring, and from 1897-1920 took part in organising many competitions in the North and elsewhere for both motor-cars and motor-cycles. His enthusiasm for the development of the internal-combustion engine has persisted, and to-day he is still a most active member of a number of motoring organisations.

Mr. Pooley's business career, after he left college, was spent, until recently, entirely with George Scott and Son in Liverpool, with which firm he occupied the positions of laboratory chief, works manager, secretary, commercial manager, and managing director during the twenty-five years of his connection with them. For twenty years he was a director of an associated company, Ernest Scott and Co., Ltd. He was interested particularly in the development of the business in the design and supply of plant for evaporating, drying, distilling, and extracting purposes, and read numerous papers before local, national and international scientific organisations on various aspects of his research and industrial work. On the termination of his connection with Messrs. Scott, he established an extensive consulting practice in the field of chemical engineering, which he has made his special subject.

Mr. Pooley has been a prominent member of the Chemical Engineering Group, and latterly has acted as its honorary secretary. He is also a Member of the Institution of Chemical Engineers, in which organisation he occupies, apart from his membership of various committees, the responsible position of director of the Appointments Bureau. He has given valuable assistance on several occasions in the organisation of chemical conferences. On the more personal side, he is greatly interested in the movement for establishing boys' clubs and developing

the interests of the younger generation in intellectual as well as athletic pursuits. He has two sons, both grown up, one of whom is following his father's profession of chemical engineer, and the other an artistic career.

Coke Oven and By-product Politics

A Suggested Parliamentary Bill

ONE of the most interesting contests in the General Election fought in the mining area was that at Wentworth, where the Liberal candidate was Mr. Philip B. Nicholson, J.P. Mr. Nicholson, who is the manager of the coke ovens and by-product plant at the Cortonwood Collieries, near Barnsley, is a past president and present honorary treasurer of the Coke Oven Managers' Association, which he helped to form, and a member of the National Council of the British Road Tar Association.

Although Mr. Nicholson was not successful, his candidature stimulated interest in the development of the coke oven and by-product industry in South Yorkshire very considerably. Mr. Nicholson placed the development of the coke oven and by-product industry in this country in the forefront of his campaign. The new Prime Minister and other Labour leaders were quoted in support of the position that in the development of the coke oven and by-product industry lies the great hope of the mines. One of the statements made by Mr. Nicholson was that to-day in the House of Commons there is no one who can state authoritatively the interests and claims of the by-product industry. He contends that, having regard to the great possibilities for the British mining industry which lie in the extraction of oil from coal and in the enormous quantities of oil for the British Navy at present obtained from abroad, it is evident that the Fuel Research Board has not received the support it should have received for lack of due representation in Parliament of the great national interests affected. Further, he urges that a Bill should be introduced into Parliament which would make practicable the economic utilisation of surplus coke oven gas through the adoption of the "grid" system to be seen in America and on the Continent, both of which he has recently toured.

Chemical Research Students in the United States

A CENSUS of graduate research students in chemistry in the United States in 1927 shows that they numbered 1,934, in 140 universities, as follows: In organic chemistry, 570; general and physical, 430; industrial and engineering, 183; physiological, 134; inorganic, 116; agricultural, 89; colloid, 79; analytical, 75; nutrition, 58; catalysis, 28; food, 27; sanitary, 25; photographic, 25; metallurgical, 21; five other sub-heads, 74. The census has been taken annually for four years by the Research Information Service Division of the National Research Council, Washington, and discloses a steady growth in the total number of such students (1,700, 1,763, 1,882, 1,934), although under the various sub-heads the numbers fluctuate. In addition to these students, 1,047 members of the faculty staffs were engaged in chemical research. In the pamphlet giving the results of the census (*Reprint and Circular Series of the National Research Council*, No. 84, Washington, D.C.: National Academy of Sciences, price 20 cents) figures are given separately under each sub-head for each university, together with the name of the head of the department of chemistry. In the same pamphlet are statistics showing the number and amounts of fellowships and other stipends received by graduate students in chemistry in 119 universities in the United States in 1927-28. Of the total number of such students, 45 per cent. received no financial assistance either from the university or from outside organisations. More than one-third of these self-supporting students (418) belonged to Columbia University, New York.

Chemicals Exempt from Key Industry Duty

THE Treasury have made an Order under Section 10(5) of the Finance Act, 1926, exempting methyl cyclohexanol methyladipate from Key Industry Duty from June 10 to December 31, 1929, and continuing the exemption from Duty of radium compounds until the same date. The Treasury Order will shortly be published by the Stationery Office.

An American Estimate of British Chemical Trade

By the U.S.A. Trade Commissioner

"British Chemical Trade in 1928" is reviewed in considerable detail and with good knowledge and judgment by Mr. Homer S. Fox, American Trade Commissioner in London, in a report of 40 pages just issued (Trade Information Bulletin 621, 10 cents, U.S. Government Printing Office, Washington). We notice, among the authorities quoted, extracts from an able article published in the Annual Review number of THE CHEMICAL AGE of December 29, 1928, and contributed by Mr. J. Davidson Pratt, general manager of the A.B.C.M. The following extracts are taken from Mr. Fox's report.

A General Impression

THE year 1928 in the British chemical industry may be characterised as one of further recovery from the trade depression experienced during 1926. Considerable expansion, both technical and commercial, and especially in the direction of centralisation of the industry, took place in 1927, and these trends continued in 1928. Home demand for chemical products was restricted to a considerable extent, particularly in heavy chemicals, by continued depression in the consuming industries. However, this was largely, if not wholly, offset by substantially increased chemical requirements by a number of the newer and more rapidly developing industries, such as rayon, automotive, radio, safety glass, and synthetic resins.

Production on the whole, as indicated by the British Board of Trade indexes for the first three quarters of the year, was appreciably better than in 1927, and also somewhat better than the general level of all trades and industries for which returns were made.

The foreign trade in chemicals showed a better expansion than the home trade, exports in 1928 having advanced by

So far as quantity is concerned, some idea of the 1928 position may be gained by studying the following table, which gives index figures for the chemical trades for 1927 and the first three quarters of 1928 as compared with general index for all industries for which returns were made to the Board of Trade:—

Period.	INDEX OF BRITISH CHEMICAL PRODUCTION.	
	Chemical and allied trades.	All industries re- porting.
1924	100.0	100.0
1927	105.2	107.5
1928, first quarter	109.1	109.5
1928, second quarter	107.9	103.6
1928, third quarter	*102.0	*99.8

* Provisional figures.

VALUE OF BRITISH CHEMICAL PRODUCTION.

Commodity.	1924.	1907.
Chemical trade:		
Chemical manufactures.....	£28,007,000	£12,947,000
Dyes and dyestuffs	6,077,000	821,000
Drugs, medicines, and medicinal preparations	14,458,000	4,507,000
Miscellaneous products	7,214,000	5,725,000
Total	55,756,000	24,000,00
Allied trades:		
Paints, varnishes and allied products	17,062,000	8,562,000
Fertiliser and disinfectant trades ..	7,982,000	5,308,000
Coal-tar products†	9,340,000	1,320,000
Soap and candle trades	30,626,000	12,218,000
Starch, blue, and polish trades	9,305,000	4,309,000
Match trades	4,371,000	855,000
Explosive and fireworks trades ...	5,328,000	3,947,000

† Presumably including the comparatively small output of coal-tar products by the chemical trades but not including coal-tar dyes.

New Commodities

One of the outstanding features of the 1928 production was the manufacture of a number of new commodities, which were placed on the domestic market. The more important of these products include a number of new synthetic dyes and a considerable extension in the range of dyestuffs, especially fast vat dyes; the commercial production of synthetic methanol at Billingham by Imperial Chemical Industries; mixed and complete fertilisers, also at Billingham; and various materials connected with synthetic resin, paint and varnish, and allied industries.

Acetone and acetic acid, heretofore imported, are now reported as being made in England in commercial quantities, although it is significant that the Board of Trade, which had placed acetone (reagent, fermentation, and synthetic) on the list of dutiable chemicals as of January 1, 1929, later reversed its decision and extended the exemption from duty to June 30, 1929.

Production of solvents is rapidly increasing in Great Britain, particularly by the Distillers Co., Ltd., which has an extensive plant under construction for the output of products of this class. This company also established an important research laboratory during the year.

Sulphuric Acid

While sulphuric acid no longer has its former importance as an indicator of industrial activity, it still occupies a major place among industrial chemicals and is, therefore, a satisfactory indication that production of this chemical in 1928 registered an increase of about 7 per cent. over 1927. Output is still considerably below pre-war production, owing in large part to smaller consumption in the manufacture of superphosphates, but the production for 1928 compares favourably with the years immediately preceding.



MR. HOMER S. FOX

5 per cent. over the previous year to £29,852,000, while chemical imports declined 6 per cent. to £23,883,000. Re-exports amounted to £2,372,000; therefore the British chemical industry for 1928 had a net favourable balance of trade amounting to £8,341,000.

American participation remained without marked alteration during 1928, although in certain lines aggressive competition had been encountered, and in one or two instances there were adverse decisions in the matter of import restrictions. One of the principal instances was the inclusion of calcium biphosphate, of baking-powder quality, in the list of chemicals subject to key industry duty of 33½ per cent.

An Optimistic Tone

An indication of the improving conditions in the industry, in general, is the marked progress in the sale and installation of chemical plants, both for replacement purposes and in the equipment of new factories. Altogether an optimistic tone is prevalent throughout most branches of the chemical and allied trades, and 1929 is generally expected to record a further gain in both home and export trade.

The latest figures for chemical production in Great Britain, except for certain individual products, are those for 1924.

In connection with raw materials for the manufacture of sulphuric acid, it was noted that during 1928 there was a substantial falling off in imports of sulphur and a gain in receipts of pyrites. One of the most important changes is the steady increase in the proportion of sulphuric acid manufactured as a by-product of zinc making. During the past year two or three additional plants have been constructed or projected for manufacture of acid by this method.

Prices have declined more or less steadily throughout the year, an indication being the fact that exports of sulphuric acid increased by 1,642 tons, or 52 per cent., in volume, while the value advanced only £8,384, or 23 per cent.

Industrial Alcohol

The use of industrial alcohol (industrial methylated spirits) in Great Britain showed a substantial increase, the total consumption of this grade in the fiscal year ended March 31, 1928, having reached 4,602,506 imperial gallons, a gain of 577,071 gallons, or 14 per cent.

Among the outstanding increases in the consumption of industrial alcohol by individual industries during 1928 may be mentioned the manufacture of varnishes and lacquers, oilcloth and leather cloth, celluloids and allied substances, incandescent mantles, solid dyes, inks, and in the printing, rubber, soap, and fine chemical industries.

There have been a few declines, as in the manufacture of explosives, dye solutions, acetic acid and allied substances, and photographic chemicals. The trade has suffered from intense competition and a heavy fall in prices, which, on the other hand, may help to stimulate consumption.

The total quantity of denatured alcohol issued during the year ended March 31, 1928, including industrial, mineralised, and power alcohol, was 6,100,872 imperial gallons, compared with 5,679,278 gallons in the preceding year. Consumption of mineralised alcohol declined somewhat, while the use of power alcohol registered a further reduction, the total quantity issued for the latter purpose amounting to only 16,745 gallons, a little more than one-third of the quantity issued in 1926-27, and less than 10 per cent. of the corresponding figure in 1923-24.

Power Alcohol

With the prevailing low prices for gasoline and encouraging prospects for a steadily growing production of benzole, the outlook for power-alcohol consumption is not promising. In spite of this domestic situation, however, the Distillers Co., Ltd., of Edinburgh, and its affiliated organisations are actively engaged in developing and fostering the use of power alcohol in other countries. During 1928 a number of important developments in connection with this company's activities took place. Toward the end of the year it was announced that with the participation of the Distillers Co., Ltd., and its subsidiary, International Sugar and Alcohol, Ltd., a plant would shortly be erected in Germany, and others in other countries.

Earlier in 1928 the Nipah Distillers of Malaya, Ltd., in co-operation with the Distillers Co., Ltd., was formed for the purpose of producing alcohol, primarily as motor-fuel, from Nipah palm plantations in British Malaya. It is understood that it now has under construction a plant with a capacity of 7,000 imperial gallons of alcohol per day. The preliminary technical work, particularly in connection with developing a dry alcohol, is understood to have been carried out in a large part at the Liverpool factory of the Distillers Co., Ltd. Similar developments are taking place in Australia under the auspices of a company affiliated with the British group.

The bulk of the alcohol used in Great Britain for denaturing is of local manufacture, but during the last fiscal year there was an increase of over 600,000 proof gallons in the quantity of alcohol imported for this purpose. However, imports of alcohol used in denaturing and in arts and industry continue to grow.

Alcohol for these purposes comes largely from Germany, although some is imported from other countries, including the United States. Alcohol imported for denaturing and use in the arts and industry as well as for scientific purposes is duty free, except for a small differential duty in the case of alcohol received from countries not enjoying a preferential tariff. In view of various inquiries from American firms, it seems desirable to point out here that this duty-free importation is very carefully segregated and is not permissible for

any ordinary use. Further, industrial alcohol, whether by itself or as an ingredient of a medicinal or other product, is subject to full alcohol duty, regardless of its importance as an ingredient of any product and of the purpose for which it is to be used, unless, of course, it comes within the permitted uses for arts or industry.

One of the most important developments during 1928 in the field of alcohol and allied products was the construction of a plant at Salt End, near Hull, by the Distillers Co., Ltd., for the production of acetone, acetic acid, and butyl alcohol, and probably other allied products later. A subsidiary company, the Industrial Solvents, Ltd., has been registered for operation of this plant, and it was anticipated that production will be commenced early in 1929.

It is understood that ethyl alcohol manufactured by the fermentation of molasses will be the starting point for the various products to be made at Salt End, but little is known of the proposed subsequent treatment. The Distillers Co., Ltd., has, however, carried on an extensive technical research programme for several years in anticipation of the desirability of branching out into the production of this class of product.

It is also reported that ethyl lactate is expected to be produced in the near future in sufficient quantities to meet the home demand. More attention is being given to the production of synthetic resins for varnishes and enamels.

Glycerine

The British glycerine trade experienced a very unsatisfactory year in 1928, with marked price declines and a continuing restriction in demand. This trade has been in a depressed condition for some time, suffering from competition of low-priced material from Continental sources as well as of various substitute materials, especially ethylene glycol and its derivatives, the latter affecting more particularly the export trade, especially with the United States, although the effect on the domestic market has probably also been noticeable.

It will be recalled that after the war large stocks had accumulated in Great Britain, and an actual collapse was averted only by the action of the United Kingdom Glycerine Producers Association in taking over Government and other stocks and disposing of them gradually over a period of years until they were finally liquidated in 1925. By that time, surplus stocks had been generally exhausted. Subsequent to the clearance of the war stocks, the price was advanced to upwards of £80 per ton for crude glycerine from soap making during the latter part of 1926 and early 1927. This price apparently had the effect of stimulating efforts to find other sources of supply as well as substitutes, and from that time there has been a reduced consumption of glycerine, with consequent adverse effects on prices and volume of business, so far as the British industry is concerned. The price of crude glycerine declined to about £35 per ton, and it is understood that supplies can be obtained from some of the smaller makers at some £7 or £8 under this figure.

During 1928 there were three reductions in the quoted price of the distilled product, a total reduction of £37 10s. in the year to a basic price of £60 per ton in 5-ton lots. In spite of these reductions by domestic makers, the imported material continued to be offered at still lower prices, and imports of the distilled material increased from 4,324 cwt. in 1927 to 7,182 cwt. in 1928, while purchases of crude more than doubled, increasing from 19,921 to 42,903 cwt.

Dyestuffs

The British dyestuffs industry appears to have experienced further expansion during 1928, both as regards total quantity of output and percentage of the home market supplied, and also with respect to the range and quality of colours produced. Exports of finished coal-tar dyestuffs, as well as other sorts, showed a marked advance, while imports remained practically stationary. There was a considerable increase, however, in the imports of intermediates. The rise in exports is of particular interest and importance in connection with the growing amount of discussion concerning the future of the Dyestuffs (Import Regulation) Act, 1920, which (in its present form, at least) expires in January, 1931.

British makers are now furnishing between 80 and 90 per cent. of the total domestic dye requirements, according to a recent statement, as compared with only about 20 per cent. before the war, and this percentage is steadily increasing.

Merchandise Marks for Scientific Glassware

Continuation of Inquiry

THE inquiry into the application for an Order under Part II of the Merchandise Marks Act, requiring that imported scientific glassware, including tubing and rod, should bear an indication of its foreign origin, was continued on Monday at the Board of Trade Offices, Westminster, by the Standing Committee (General Merchandise) appointed by the Board under the Act, over which Sir Hubert Llewellyn Smith, G.C.B., presides. (The earlier proceedings were reported in our issue of last week, pp. 536-537.) The application is made by the British Chemical Ware Manufacturers' Association and the British Lampblown Scientific Glassware Manufacturers' Association. There are objections by the China and Glassware Section of the London Chamber of Commerce, the British Laboratory Ware Association, and the Electrical Importers and Traders' Association.

At the opening of the proceedings on Monday, Mr. R. MORITZ, K.C. (for the applicants), added to the list which had been submitted previously of articles which the applicants were willing should be excluded from the scope of the marking Order, assuming the Order is made. The list now comprises: Blow-pipe jets, glass eyes, tubing under 6 mm. in external diameter or 2 ft. in length, arsenic tubes, ampoules, vaccine tubes, glass cells, hollow prisms, microscope cover glasses, burette jets, test tubes up to 6 in. long and/or $\frac{1}{2}$ in. external diameter, X-ray tubes, radio flange tubes, stemming glasses.

Price of Tubing

Mr. J. DAVIES (managing director of A. Gallenkamp and Co., Ltd., manufacturers of scientific apparatus and laboratory fittings), continued his evidence. Referring to glass tubing, he said the price of the foreign tubing was 6d. per lb. The prices of British tubing, prior to the production of machine-drawn tubing in this country, had ranged from 10 $\frac{1}{2}$ d. to 1s. 2d. per lb., but the price of British machine-drawn tubing was now 8d. per lb. Mr. Moritz said that the general price charged by the Osram Co. was 7d. per lb., for any quantity.

Questioned with regard to quality, witness said the English tubing had become much better. His company had made trials of Osram tubing and had found it to be very good, and they would buy it.

Mr. Moritz said he gathered that witness objected, first, to the marking of imported blanks which were graduated in this country; secondly, to the marking of the glass parts of composite articles; and to the marking of tubing. Mr. Davies agreed, and said he also objected to the marking of imported articles the like of which were not made in this country.

Marking of Imported Tubing

Mr. Moritz suggested that if imported tubing, which was bought in 5 ft. lengths, were marked at each end, and it was necessary to cut off $\frac{1}{2}$ in. at each end when the tubing was made into other articles, the sacrifice would be a very small proportion of the total cost of the finished articles. With regard to the objection to the marking of articles the like of which were not made in this country, counsel pointed out that arrangements were being made for the making of further articles in this country.

Mr. Moritz asked if witness would change his views if articles which were not at present made in this country were made here in the future. Mr. Davies said he did not know that he would be in favour of marking the foreign articles then, even if similar articles were made in this country at comparable prices.

Use of Foreign Blanks

It was suggested by counsel that the real reason why foreign blanks were used for graduating in preference to British was that the prices of the foreign were lower. Witness replied that his company used some British blanks. The foreign were considerably cheaper than the British, and, so far as he knew, there were only one or two manufacturers in this country who made blanks, and he did not consider that he should be compelled to rely on one or two firms for the supply of his raw material. Counsel pointed out, however, that it was not the intention to force scientific glassware manufacturers to

buy British blanks only, but merely to ensure that the customers would have an opportunity of knowing whether they were buying British or foreign.

It was pointed out by counsel that in connection with some Government contracts it was specified that articles of British manufacture be supplied wherever possible, and he asked if witness would supply an article, consisting of a foreign blank graduated in this country, as an article of British manufacture. Mr. Davies replied that he would. He would supply such articles to meet such contracts unless it were specified definitely that the articles be made from British blanks.

Mr. Moritz pointed to certain articles in which the cost of the blank was as great as or greater than the cost of graduation. If that were so, he asked if witness would conceive it a hardship to have to mark such an article "foreign blank, British graduated." Mr. Davies said that he would.

Imported Articles Containing Glassware

In regard to composite articles imported from abroad, and which contained pieces of glassware, Mr. Moritz said he would be inclined to suggest that if the glassware constituted a minor part of the value of the whole, such composite articles might be excluded from the scope of the marking order, if a suitable formula could be found.

The Chairman pointed out that the applicants were asking that the goods should bear the marks at the time of importation, and he asked whether it was suggested that the Customs authorities should have to examine every piece of apparatus imported, in order to see whether it contained glass.

Mr. Moritz said the difficulty might be overcome by providing that the Order, if made, should include composite articles of which the major part was glassware.

The Chairman said the Committee would think the matter over.

In reply to a further question by the Chairman, witness said that the majority of blanks were useless until they were graduated, but some were sold without graduation. The Chairman asked how the latter would be differentiated from blanks which were to be graduated, if it were decided to exclude the latter from the scope of the Order. Mr. Davies said he did not think it would be possible for the Customs to distinguish between them.

Further Evidence Against Marking

Mr. W. G. Marsh (of Townson and Mercer, Ltd., laboratory furnishers, dealers and manufacturers), who gave evidence in opposition to the application, said the applicants were entitled to ask for the marking only of imported glass which competed with that which they supplied, e.g., various forms of beakers, flasks and basins. These were certainly important articles, but constituted only a small part of the scientific glassware required. No attempt had been made by the applicants to manufacture many of the other equally important types which were essential, such as the numerous kinds of desiccators, funnels, Kipp's apparatus, drying towers, wash bottles, etc., yet these articles appeared in the list of articles it was requested should be marked. He corroborated the evidence of Mr. Davies.

The Chairman, who was exploring the possibilities of indicating origin by means of labels, said that if tubing and rod were sold in smaller quantities than the bundles received by the dealers, it would be necessary for them to attach labels to those smaller quantities, and he asked if that would be a hardship. Mr. Marsh replied that it would cause a certain amount of trouble, but it could be done quite easily.

Cost of Marking

Mr. Henry Bush (managing director, Henry Bush and Co., Ltd., wholesale druggists' sundriesmen) objected to the marking of lampblown glassware and measures on the grounds of expense and defacement. The intrinsic value of the majority of lampblown articles, imported in bulk, he said, was very low. The cost of marking in this country would be about 4s. per gross on small articles easily handled. Assuming, however, that the cost of marking abroad would be very much cheaper, that cost would still represent a substantial percentage addition to the cost of the articles. As an example,

he said the landed cost of small test tubes was from 1s. to 4s. per gross, and the cost of marking he estimated at 1s. per gross, so that the percentage increase in cost would be from 100 down to 25 per cent. He pointed out that the landed cost given was exclusive of the 33½ per cent. duty already levied, and the amount of the duty would be increased as the result of marking, because the duty would be levied on the cost of the articles plus the cost of marking.

A determining factor in the cost of marking was the quantity to be marked at any one time. In a large factory, with proper organisation for conveying the articles to the point at which the marks were applied, one operator could be employed on marking, at very small cost, but the cheap lampblown glassware was usually made by workpeople in their own homes, who had not such organisation. At best it was made in very small factories.

There was a very considerable export trade in graduated measures. It was already difficult to keep the export business, because Continental prices were lower than British prices, and any indication of Continental origin would induce buyers in the Colonies and other places abroad to buy direct from the Continent.

Mr. Moritz, cross-examining, asked if the users of graduated measures knew the origin of the measures they bought. Mr. Bush said he did not suppose they did.

Mr. J. D. Tatlock (a managing director of Griffin and Tatlock, Ltd., laboratory furnishers) also opposed the application. About one-third of his company's sales of scientific glassware, he said, was English. His experience was that there were a number of articles which he could not obtain from manufacturers in this country in sufficient quantities except with the greatest difficulty, and the price was very much higher than the price of the similar foreign goods. That applied to a wide range of goods. Some of the articles required were not obtainable from British manufacturers at all. The chief difficulty, in his view, was that of obtaining the skilled workers required, and he felt that to some extent also there was a certain reluctance to make the goods because they were required only in small quantities.

Concluding Speeches

A short sitting was held on Tuesday, when the concluding speeches of counsel on either side were delivered.

Mr. Macaskie, for the opponents, first referred to the small—he would not say insignificant—character of the industry in this country, having regard to the number of persons employed in it, and the output, it having been admitted that the estimate of 3,000 employees must be a considerable overestimate when the figures were investigated.

The Chairman remarked that although, taking the employees and output as a measure, the industry was a small one, it must not be overlooked that the industry had been regarded as sufficiently important to be brought within the Safeguarding Act. The minds of the committee would not be influenced merely by the number of employees, and regard must be had to the fact that the industry had been scheduled as a key industry.

Mr. Macaskie said that on the evidence it was clear that, as regards a very large number of articles, there was no competition from foreign goods, because they were not made in this country at all. The Chairman asked Mr. Macaskie if it was part of his case that the committee had no business to make an order in the case of goods coming in from abroad and not made in this country. Mr. Macaskie said he understood the spirit of the Merchandise Marks Act was to decree a marking order when the Committee was satisfied that a foreign article was imported, and that there was confusion in the mind of the purchasing public as to the origin of the goods. Was it reasonable for a marking order to be asked for when the particular goods were not made in this country? He did not wish to push that point of view too far, however.

Graduated Articles

Dealing with the case as a whole, Mr. Macaskie said the main objection to a marking order was in respect of graduated ware, viz., glass blanks that came into this country, and were graduated and marked here, this latter representing the most substantial portion of the total cost of the article. The case for the applicants in this respect related almost entirely to what was known as boiling glassware, viz., thermometers and tubes, which were made in this country. The many

varieties that were not made in this country had not been spoken of at all by any of the applicants' witnesses. He contended that the applicants had not been able to satisfy the committee that the blank underwent any substantial change or that the value of the blank was equal to the cost of the subsequent graduation that was carried out in this country. On the contrary, even the applicants' witness who did mention this latter point indicated the case in which the blanks cost 6s. per dozen, and the cost of graduation was 14s. per dozen. There were many other instances, as shewn by the opposition witnesses, in which the cost of the graduation was many times the cost of the blank.

The Chairman: In the legal sense, you do not think the graduation makes a substantial change.

Mr. Macaskie admitted he was in some difficulty about that because in one of the decisions of Mr. Cyril Atkinson—the Referee under Part I of the Key Industries Act—it rather appeared that glass measures did not become scientific glassware unless they were graduated with scientific accuracy, so that the problem of when glassware was scientific glassware was still to be solved. That decision left it open to someone to argue that the glass had not been graduated with scientific accuracy, and therefore, was not scientific glassware. Personally, however, he rather thought the intention of that decision was to draw a distinction between the blank which had no graduation at all, and a blank that had been graduated. On that hypothesis there was no ground for asking for the marking of the blanks, and as under the Atkinson decision, the blanks would not be regarded as scientific glassware, they would be outside the present application.

There was nothing in the Merchandise Marks Act permitting the use of such a form of marking as "Glass foreign; graduation British."

The Chairman: There is nothing to forbid it. So long as you put the mark required by the order there is nothing to forbid any other mark being put on. We cannot prevent that.

Tubing and Rod

The suggestion of the applicants for the marking of tube and rod was, said Mr. Macaskie, outrageous. They were asking for an importation order; the tubing and rod came over here in bundles which were wrapped at the ends, and several bundles were packed in a wooden case. The result of an importation order would be that every case would have to be opened by the Customs officials, and at least one end of each bundle unwrapped to satisfy them that the marking order was being complied with, and there were tens of thousands of these bundles coming into the country every year. Surely that would place an excessive burden upon the Customs authorities. Moreover, his evidence had shown clearly that the cost of marking glass tube and rod would add 25 per cent. to the cost and would place an intolerable burden upon those who had to use these things. The foreign manufacturer would not care, because the extra cost would go on to the price of the article, and the extra value would also come into account for the purpose of Key Industry Duty.

Reply for the Applicants

Mr. Moritz, K.C., replying for the applicants, said that while it was true that this industry was a small one from the standpoint of the number of people engaged in it, it was an industry that had expressly been safeguarded under the Safeguarding of Industries Act of 1925, because it was considered to be of national importance. It was perfectly obvious that the Government which passed the Act attached the greatest importance to keeping this industry alive, and when it was said that a certain number of the articles in the schedule to the Act were not made in this country, it was relevant to consider that when the Government passed the Act of 1925, it did so in the full knowledge that some of the items in the Schedule were not made in this country, and he argued that there was no sound reason in recommending a marking order to exclude from it the relatively small number of items not made in this country at the present time. There were some things which we could not do in this country, but the catalogue that had been put in shewed the enormous range of goods that could be made here; it did not necessarily mean that every one of them was stocked, because the demand for some was so small that if the manufacturers endeavoured to stock every single item, they would soon be ruined.

Discussing the general features of the case, Mr. Moritz said

that as regards thermometers, there had been no substantial cross-examination of the applicants' witnesses, and it was reasonable for him to assume that there was no objection on the part of the opponents to an order in respect of them. Mr. Macaskie had not addressed a single observation to the committee with regard to them, and therefore he would assume the opponents did not object to an order as regards thermometers. Equally, it would be fair to say the same in regard to plain boiling ware, which represented very largely the tools of the chemist.

As far as composite articles were concerned, the case was really simple. The applicants had prepared a list of items which they were prepared to have exempted, and the opposition had been invited to add to that list, but they had not done so. It only contained some 12 or 13 items, and he contended that the exemption of these items would largely meet the case with regard to composite articles. No such absurd suggestion was made by the applicants that every item going to make up a composite article should be marked; that would be a grossly oppressive suggestion. At the same time, the argument was that if one item of a composite article were marked, it would brand the rest, but that was a misfortune that would have to be put up with if a marking order was recommended.

Continuing, Mr. Moritz contended that marking by means of a label would not be satisfactory, and that marking in the course of manufacture, which would be the most satisfactory course, could be done at a negligible expense, something like $\frac{1}{4}$ per cent. The difficulty of marking by labels was that many purchases of tube and rod were made in small quantities, and the original label would be taken off the large consignment from which the small purchases were made.

The inquiry then closed, the chairman indicating that the committee would report in due course.

Coefficient of Expansion of China Clay

An American Investigation

DETERMINATIONS of the coefficient of linear expansion of 17 British China Clays, which had been fired to seven different temperatures, have been made at the United States Bureau of Standards by the Fizeau-Pulfrich method, which has been in use at the Bureau for the measurement of small dilatations for a number of years. Because of the fine-grained character of the clays and the fact that there was no admixture present, this method was considered to be the best for the purpose. The clays had been fired to cones 3, 5, 7, 11, 14, 18 and 23.

The thermal expansion curves obtained were practically linear in character over the range investigated, from room temperature to 600° C. An interesting fact brought out in the investigation is the peculiar behaviour noted in the linear expansion curves for all the clays that had been fired to cones 3, 5 and 7. In each case a "kink" was shown in the curve in the approximate range of 120 to 280° C., where the slope of the curve decreased considerably. This was probably caused by the presence of some water in the sample, but in just what form it was present it is impossible to say without further investigation of the matter. In each case a second determination resulted in a linear thermal expansion curve over the range from room temperature to 600° C., from which the mean coefficient of linear expansion was calculated. The calculated mean coefficients showed a minimum value of 0.287×10^{-6} and a maximum of 0.501×10^{-6} , with an average value of 0.387×10^{-6} .

From an examination of the results obtained, it would appear that the average tendency was for a gradual increase in the value of the mean coefficient of linear expansion from cone 3 to cone 11, followed by a gradual decrease in the values obtained for the clays fired at the higher temperatures.

New Japanese Synthetic Fertiliser Company

FIVE companies in Japan (the Tokyo Electric Light, Toshin, Toho and Daido Electric Power and the South Manchuria Railway) have established a new company for the purpose of manufacturing ammonium sulphate with surplus electric power and gas. Engineers of these concerns recently settled a contract in Germany for the purchase of plant for the manufacture of this product. It is reported that the capitalisation of the new company is to be 45,000,000 yen. Production is expected to begin in 1931 and it is believed that the annual production of ammonium sulphate will be 100,000 tons each in Japan and Manchuria.

Patent Law Reform

Report by the General Council of the Bar

THE proposals for reform of the British Patent System recently put forward by the British Science Guild have been reviewed by a committee of the Bar Council, the members of which included, amongst others, Sir Duncan Kerly, K.C. (chairman), Mr. James Whitehead, K.C., the Hon. Stafford Cripps, K.C., and Mr. Trevor Watson. The views of this committee, which were arrived at after minute examination of the report of the British Science Guild, are of particular interest in view of the recent appointment by the Board of Trade of a departmental committee under the chairmanship of Sir Charles (formerly Lord Justice) Sargant, to consider the same subject.

The Bar Council warmly commend the report of the British Science Guild, which was the work of a committee whose chairman was Dr. W. H. Eccles, F.R.S., and whose honorary secretary was Capt. C. W. Hume; they consider that most of the proposals of the report are reasonable and likely to be useful. Commenting on some particular points, they express the view that a patent ought not to be invalidated by mere "Paper" anticipations—that is, by the publication many years ago of ideas which were still-born and have never become known to the trade. They agree that there should be stronger remedies against unwarranted threats by which persons wrongly claiming to possess patent rights may seek to prejudice rival manufacturers, and they also support the proposal that appeals from the decisions of the Comptroller of the Patent Office should be heard by a special judge in chambers, instead of by the Attorney-General or Solicitor-General as at present.

The only proposals made by the British Science Guild which elicit opposition from the Bar Council are those whereby the judicial duties of the Comptroller of Patents would be extended. They hold that he should not be empowered to act as a court of first instance for the trial of infringement actions; but they propose, as alternative remedies for the admittedly high cost of patent actions:—(a) arbitration by consent of the parties; and (b) agreement between the parties whereby the issues to be tried in court should be restricted. The report of the Bar Council Committee deals in detail with the various paragraphs of the British Science Guild Report.

New Uses for Lead

IN addition to Amaloy, which is being used for soldering work in the automobile industry and in the manufacture and installation of electrical equipment, a few other new uses for lead have come into prominence lately, and some of these may develop into important items of consumption, says Lewis A. Smith in a report recently issued by the United States Bureau of Mines, Department of Commerce. In building construction, interest is evoked by the use of lead mattresses to act as shock absorbers between the foundations and the steel framework of skyscrapers. In one building in New York about 55 tons of lead appears to have been used for this purpose.

In the pigment field a new lead preparation called "Subox" has been introduced. This preparation, which consists of very finely divided particles of lead suboxide suspended in linseed oil, can be sprayed or applied with a brush upon any surface. After being applied it undergoes a slow transformation, resulting in a film of metallic lead held firmly as a protective coat by the oxidised oil.

Determination of Viscosity in Absolute Units

A REVISED issue of British Standard Specification No. 188 (1929), "British Standard Method for the Determination of Viscosity in Absolute Units," has just been published by the British Engineering Standards Association. The first edition of this specification appeared in 1923, and the present revision was undertaken in the light of criticisms and suggestions which have since been received. The opportunity was taken of recasting the entire specification and also of introducing data likely to be of service to users, which have been incorporated in several new appendices. The revised specification should prove of considerably increased value to all laboratories engaged in work on viscosity. Copies of the specification can be obtained from the Publications Department, British Engineering Standards Association, 28, Victoria Street, London, S.W.1, price 2s. 2d., post free.

Dr. Pyman Becomes Director of Boots

THE annual general meeting of Boots Pure Drug Co., Ltd., was held at Nottingham on Thursday, June 6. The chairman of the company, the Hon. J. C. Boot, reported, with deep regret, the death in January last of Dr. W. J. Bowis, who had been a director since 1908. In his place on the board the directors had elected Dr. F. L. Pyman, F.R.S., who was in



DR. F. L. PYMAN, F.R.S.

charge of their research laboratories. The company's new unit at Beeston would start production this month. In conjunction with Professor Robinson, F.R.S., and with the biochemical departments of several universities and medical schools, their research department was working on problems in the forefront of medical science. Among them researches on vitamins, carried out in their own laboratories, had been largely responsible for the high repute of their vitamin preparations, such as "Vitamalt."

Clay in Saskatchewan

THE clay deposits in the Province of Saskatchewan, according to a recent official statement, are very extensive, and supply raw material for a great variety of products, such as china, porcelain, general white ware, glazes, refractors, and some are suitable for paper filler. There are very large deposits of this class in Southern Saskatchewan, especially in the Readlyn-Willows district, the Dirt Hills, along Big Muddy Lake and nearby territory. These semi-China or Ball Clays are exceptionally important, as they are not found elsewhere in the Dominion, and are necessary in the manufacture of so many of the high-class wares. There are also fire clays of highly refractory characteristics, which are used in the manufacture of firebrick, flue and furnace lining, locomotive arch tile, tractor block and other articles.

Mining operations on these large deposits of highly valuable clays are carried on at Claybank and Willows. It might be of interest here to point out that high-grade refractory clays are not common elsewhere in the Dominion. The Saskatchewan clay plant now supplies locomotive arch tile to the railway companies who formerly had to import their requirements in this material from the United States.

Pottery clays, with buff burning, refractory and plastic characteristics, suitable for yellow ware, stone ware, terra-cotta, and other porcelains in daily domestic use, are found at Eastend, Willows, Big Muddy and elsewhere. One particular clay of this nature in the Eastend field is claimed to compare favourably with the best pottery clays found anywhere in the world. Common brick and structural clays, of which there are unlimited quantities found over a wide area, are used as structural material, such as brick and tile, fireproofing, paving brick, sewer pipe, terra-cotta, red ware pottery.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

(129). *Magnesia*.—A firm in Leeds is anxious to get in touch with suppliers in this country of electrically sintered finely ground magnesia.

Appointments Vacant

ASSISTANT RESEARCH CHEMIST. Details on p. xxiv.

ADVISER IN AGRICULTURAL CHEMISTRY in the University of Manchester.—The Registrar, June 20.

Colour and Chemical Merchants' Affairs

THE public examination of Smith and Larcombe, colour and chemical merchants, of 10, Philpot Lane, London, E.C., was held before Mr. Registrar Meller in the London Bankruptcy Court on Tuesday. Frank Smith was described in the receiving order as above, and after that order was made his case was consolidated with that of Robert Alexander Larcombe, against whose estate a receiving order had also been made separately. A statement of the firm's affairs as lodged by Smith showed liabilities £2,099 and assets £812. The Official Receiver informed the Court that this debtor had attended regularly on his department and had done all that was required of him, but the debtor Larcombe had persistently refused to file a statement of affairs. It had been felt that it was rather hard on Smith that his public examination should not be taken because of the default of Larcombe, and although the latter debtor did attend on Friday last, he had not yet filed any statement of affairs. He (the Official Receiver) now intended proceeding with the examination of the debtor Smith and of asking for an order on Larcombe to lodge a statement of affairs and for an adjournment of his examination for another month. Smith stated that after beginning business on his own account at 56, Gracechurch Street, City, where he dealt in colours and dyes, in February, 1915, or 1916 he took into partnership the debtor Larcombe. He himself provided £600 capital and also goods to the value of £100. No definite arrangement was made between the partners with reference to drawings, and that, he now agreed, was very careless. There was a No. "1" banking account on which they both had powers to draw, and when in 1916 the firm began the blending of dyes from a warehouse in New Malden, Surrey, a No. "2" account was opened. This account was under the control of Larcombe, who had sole drawing powers. In May, 1926, his accountants had great difficulty in obtaining accounts from Larcombe with a view to settling up the accounts of the firm and ascertaining the position. But eventually a balance sheet was prepared, and this showed that he (Smith) was in credit to the amount of £1,496, but that Larcombe was in debit to the extent of £1,076. A Mr. Webb had become the manager of the business, and it had been agreed that he should receive a share of the profits. In March, 1927, there was due to Mr. Webb a sum of £630 and in respect of such share a writ was issued against the firm. Webb recovered judgment and garnisheed the No. "1" banking account. In March, 1927, the Inland Revenue authorities issued two writs for E.P.D. and income tax, the amount claimed being £2,400, and ultimately he decided to institute proceedings for dissolution of the partnership, a receiver being appointed in April, 1927. The receiver continued to carry on the business until July with Webb as assistant. Ultimately the receiver sold the stock under an order of Court, and the balance had been handed to the Official Receiver. In September, 1927, he (Smith) took an office at 10, Philpot Lane, City, where he began an agency business in the same kinds of goods. This business he was still conducting. The debtor Larcombe was asked by the Official Receiver: "Do you agree with this account given?" The debtor: "It is quite all right." The examination of Larcombe was then ordered to be further adjourned for a month and that of Smith was ordered to be concluded.

From Week to Week

A NEW CHEMICAL FACTORY, states the *North Mail*, is to be erected at Haswell, Sunderland.

PROFESSOR AND MRS. JOCELYN THORPE are holding an "At Home" at 27, Chelsea Park Gardens, S.W.3, on Friday, June 28, to meet Dr. and Mrs. Little from America.

THE UNION CHIMIQUE BELGE has arrived at an understanding with the Pharmacie Centrale de Belgique, whereby the latter will take over the pharmaceutical division of the Union.

SODA from Lake Magadi exported to Japan in 1927 amounted to 46,499 tons, and in the first half of 1928 to 24,350 tons; exports to India in 1927 amounted to 4,625 tons, and in the first half of 1928 to 1,950 tons.

THE RT. HON. WILLIAM GRAHAM, M.P., President of the Board of Trade, has appointed Mr. W. B. Brown to be his principal private secretary, and Mr. J. G. Henderson, O.B.E., M.C., to be his assistant private secretary.

THE COOKSON PRODUCE AND CHEMICAL CO., LTD., London, announce that they have been appointed sole agents in the United Kingdom for the crude and refined Montan waxes manufactured by Heimann and Co., of Berlin.

THE FOURTH REPORT of the Government Laboratory of Siam, prepared by the director, Mr. A. Marcan, F.I.C., has just been issued. The chief feature of the period reviewed (April, 1926-March, 1928) is the commencement of operations in the technical laboratory.

MR. C. B. PETERS and Mr. Sidney B. Haskell, president and vice-president respectively of the Synthetic Nitrogen Products Corporation, New York City, are in Europe, and will return to America about July 1. While in Europe they expect to give considerable attention to recent developments in the use of fertilisers, particularly the progress in pasture fertilisation on the Continent and in England.

DR. R. LESSING, after having practised at The Laboratory, Southampton House, 317, High Holborn, London, for over 21 years, has taken new premises, which will allow him to carry out research and experimental work on a larger scale. His address is now 94A, Horseferry Road, Westminster, London, S.W.1 (telephone, Victoria 6172 (2 lines); telegraphic address, "Pyrophoric," Sowest, London).

"CHEMISTRY AND PHYSICS" is the title of a pamphlet (H.M. Stationery Office, pp. 14, 2d.) compiled by arrangement between the Incorporated Association of Head Masters of Public Secondary Schools and the Ministry of Labour. Its purpose is to afford useful and authoritative information to parents, teachers and all who are concerned in advising boys from public secondary schools on the choice of a suitable career. Further pamphlets on other professions and occupations are in course of preparation, and will be published at short intervals. The series is called "Choice of Career Series (Secondary Schools)," of which the present is No. 1.

THE MEDICAL RESEARCH COUNCIL have issued a report on "The Carbohydrate Content of Foods." The figures given, based on the investigations of Drs. R. A. McCance and R. D. Lawrence, are for "available" carbohydrate. The highest percentage is in chestnuts, 29.2; dried peas and old potatoes contain 19.4 and 19.2 respectively; bananas, 18.7; of other fruits, grapes contain 10.0, raw ripe plums 8.9 (stewed 2.5), raw blackberries 4.9 (stewed 3.5), oranges 6.2, and olives none. Nuts contain percentages ranging from 11.4 for peanuts to 2.5 for Brazils. Beetroot stood at 8 per cent., horseradish at 8.1, carrots at 5.9, and onions at 5.4, but the majority of vegetables were under 2.

"THE CANADIAN MINING AND METALLURGICAL BULLETIN" in its May issue reprints the paper by Professor G. W. Worcester entitled "Saskatchewan Clays of Dominion Importance," prepared for the annual general meeting at Winnipeg of the Canadian Institute of Mining and Metallurgy. The journal in question can be consulted at the Canadian Building, Trafalgar Square, London, S.W.1. Professor Worcester's paper contains particulars of early investigations into Saskatchewan's clay deposits, and chemical analyses of refractory and other clays found within the Province. The importance of the development of these refractory clays in association with the growth of the metallurgical industry in Northern Canada is emphasised.

A NEW MOTOR SPIRIT, claimed to possess exceptional anti-detonating properties owing to the addition of certain material derived from the crude oil itself, was announced by Sir John Cadman, chairman of the Anglo-Persian Oil Co., at a luncheon given by the British Petroleum Co., Ltd., at the Savoy Hotel on Wednesday. The new spirit was to be on sale throughout the country on Thursday. The claim was made that it was an "ideal" spirit. Its volatility ensured an easy start under all weather conditions; and gave a clean exhaust; there was no free sulphur, and therefore no objectionable odour, and it was absolutely free from gum and therefore innocuous to all metal and moving parts. The spirit had been evolved by the chemical experts of the company, to whom Sir John paid a tribute.

MR. LEWIS MORETON PARRY, of Liverpool, has been elected president of the Pharmaceutical Society of Great Britain.

MR. C. S. SHAPLEY, manager and engineer of the Leeds Gas Department, has been elected president of the Institution of Gas Engineers.

MISS ISOBEL YOUNG MCGOWAN, elder daughter of Sir Harry and Lady McGowan, was married on Wednesday at St. Margaret's, Westminster, to Mr. D. M. Stephens.

TATE AND LYLE, the largest sugar refiners in the country, have acquired complete control of Fairrie and Co., the Liverpool sugar refiners, as from August 1 next. Fairrie and Co., however, will be conducted as a separate concern under the general management of Mr. Geoffrey Fairrie.

THAT VERY HANDY editorial desk calendar issued by *The Newspaper World* continues to arrive every quarter with the regularity that characterises the pressman's own journal. The calendar for July, August and September is just to hand in good time, and is acknowledged with appreciation.

THE LITHOPONE PRODUCTION of the Electrolytic Zinc Co. of Australia is to be increased. Land for the erection of a factory has been acquired near the works of the British Australian Lead Manufacturers, on the Parramatta River, and constructional work will commence shortly. It is thought that the British Australian Lead Manufacturers will participate in the new undertaking.

THE NORTH BRITISH ARTIFICIAL SILK CO. states in a progress report that the works at Jedburgh were completed at the end of May, except for minor details, and on June 3 the machinery was set in motion. A formal opening will take place this month. The works are being run on the smallest practicable scale at the start. Everything is available for increasing the rate of production step by step. The completion, it is pointed out, refers to the whole of the plant.

RECENT WILLS INCLUDE: Mr. Frank Warburton, of Farnworth, chemical manufacturer, of the firm of Harrison, Blair and Co., Ltd. (net personalty £12,386), £12,552.—Frau Mathilde Mathias (formerly Brandholt), of Montreux, Switzerland, widow of Maximilian Brandholt, sister of the late Dr. Ludwig Mond and aunt of Lord Melchett, unsettled property in England (net personalty £173,191), £176,602.—Mr. J. G. Forster, Liverpool, of J. G. Forster & Co., chemical merchants (net personalty £20,208), £20,531.

PATENT FUEL MANUFACTURERS in South Wales are forming a new company, to be known as British Briquettes, Ltd., for consolidating the various interests. The new combine, of which Sir John Beynon will be chairman, proposes to concentrate on one selling agency for the whole of the concerns, with a scheme for economies in working costs. The companies included in the new scheme are: The Anchor Fuel Co., the Arrow Patent Fuel Co., the Crown Preserved Coal Co., the Graigola-Merthyr Co., the Pacific Fuel Co., the Phoenix Patent Fuel Co., the Rose Patent Fuel Co., and the Star Patent Fuel Co.

UNIVERSITY NEWS.—London: The D.Sc. in metallurgical chemistry has been conferred on Mr. J. C. Hudson for a thesis entitled "Third (Experimental) Report to the Atmospheric Corrosion Committee (of the British Non-Ferrous Metals Research Association)"; and the D.Sc. in agricultural chemistry on Mr. V. Subrahmanyam for a thesis entitled "Biochemistry of Waterlogged Soils."—Leeds: The degree of D.Sc. has been awarded to Mr. J. H. Birkinshaw, for a thesis entitled "Studies in the Bio-Chemistry of Micro-Organisms"; and to Mr. A. J. V. Underwood, for a series of papers entitled "The Application of Mathematical Methods to some Engineering Problems."—Oxford: Miss M. O. Farrow, lecturer in chemistry, has been elected to an official fellowship at St. Hugh's College.

AT SPENNYMOOR (DURHAM), on Tuesday, Dent Sons and Co., Ltd., of Harrogate, owners of a tar distilling plant at West Carnforth, were fined £5 and costs on each of two charges of not providing suitable washing accommodation and not providing suitable bath accommodation. Mr. W. E. Harding, Inspector of Factories, of Middlesbrough, said that the regulations provided that where the process of distilling tar was carried out suitable washing accommodation of at least one basin to each five workmen, with a supply of hot and cold water, should be provided. The regulations also provided that there should be suitable bath accommodation. These regulations were imposed, said Mr. Harding, for the prevention of a disease known as "sweets cancer," and a bath had to be provided so as to act as a preventive. Mr. J. E. Brown Humes, for Messrs. Dent, pleaded guilty, and said that an undertaking had been given that the necessary work to comply with the regulations should be put in hand at once.

Obituary

DR. EMANUEL FORMANEK, professor of medical chemistry and toxicology in the Charles University, Prague, recently, aged 68.

DR. BERNHARD SCHUCK, director of the Aussig works of the Verein für chemische und metallurgische Produktion, in Germany, on May 20, aged 47. He was closely connected throughout his life with the cyanamide industry. He supervised the construction and operation (until 1922) of the synthetic nitrogen products plant at Cherzow.

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- GENERAL.—Oxidations with fluorine. XIII. The action of fluorine on alkaline acetate solutions. F. Fichter and E. Brunner. *Helvetica Chimica Acta*, Vol. 12, Part 3, pp. 573-576 (in German). The metallic carbonyls. A bibliography. R. L. Mond. *Chimie et Industrie*, May, pp. 937-940 (in French). The reduction of zinc oxide by carbon monoxide at atmospheric and higher pressure. O. Dony. *Acad. Royale Belgique-Bulletin Classe des Sciences*, Vol. XV, Part 4, pp. 254-264 (in French). Note on the radiochemical synthesis of ammonia. E. Ponsaerts. *Bulletin Soc. Chimique Belgique*, April, pp. 110-120. An investigation of the action of radon on a mixture of hydrogen and nitrogen (in French).
- OILS.—The highly unsaturated acids of sardine oil. I. A new acid $C_{16}H_{26}O_2$ and the highly unsaturated C_{18} acids. Y. Toyama and T. Tsuchiya. *Bulletin Chem. Soc. Japan*, April, pp. 83-91 (in German).
- ORGANIC.—The catalytic hydrogenation of phenol and naphthol ethers by means of hydrogen and platinum. E. Waser, H. Sommer, C. Landweer and C. Gaza. *Helvetica Chimica Acta*, Vol. 12, Part 3, pp. 418-443 (in German). Investigations on the ozonisation of unsaturated gaseous hydrocarbons. III. The ozonisation of butylenes, of aldehydes and of acetone. E. Briner and R. Meier. *Helvetica Chimica Acta*, Vol. 12, Part 3, pp. 529-553 (in French). Sinomenine and disinomenine. VIII. On colour reactions of sinomenine and sinomenol. K. Goto. *Bulletin Chem. Soc. Japan*, April, pp. 103-105 (in English). The action of nitrogen chloride on toluene and cyclohexene. N. Stoll. *Bulletin Soc. Chimique Belgique*, March, pp. 71-96 (in French). Trifluoro-alcohols. II. Trifluoroisopropyl alcohol. F. Swarts. *Bulletin Soc. Chimique Belgique*, April, pp. 99-109 (in French).

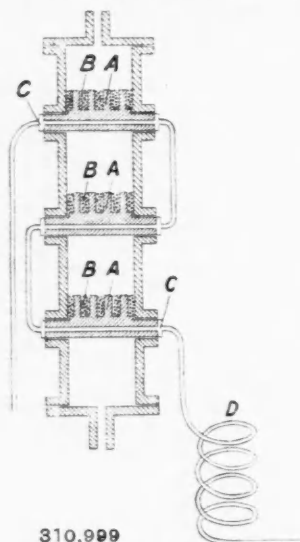
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

310,999. GASEOUS AND READILY VOLATILE OLEFINS FROM HYDROGEN AND OXIDES OF CARBON, MANUFACTURE AND PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, February 6, 1928.

In the production of ethylene and other olefins from oxides of hydrogen and carbon in the presence of catalysts, the catalysts soon lose their activity owing to the deposition of carbon. This may be avoided if the catalyst is maintained at a uniform temperature by means of a cooling medium. The illustration shows a high pressure reaction vessel having



310,999

four superposed compartments. The shelves A of manganese copper are recessed to contain the catalyst B, and are provided with bores C through which steam from a superheater D is passed at 360° C. A gaseous mixture (e.g., carbon dioxide 2 per cent., carbon monoxide 23 per cent., hydrogen 71 per cent., and nitrogen 4 per cent.) is passed through the reaction vessel from the top at a pressure of 120 atmospheres. The catalyst may consist of finely divided copper, silver, gold or iron. The catalyst is thus maintained at a uniform temperature, and the final gas contains 3-4 per cent. of ethylene, propylene, butylene and amylene.

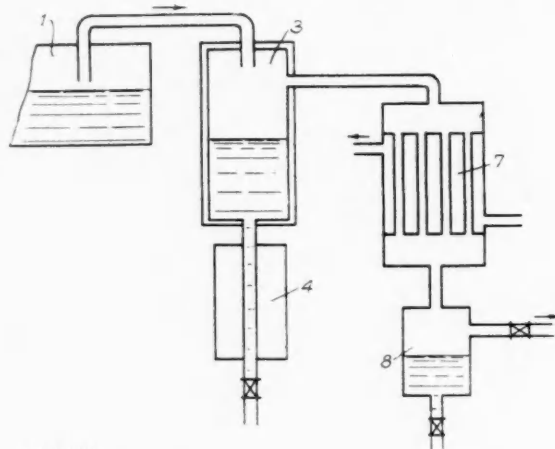
311,047. CONDENSATION PRODUCTS OF THE BENZANTHRONE SERIES, PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, March 16, 1928.

Condensation products of the benzanthrone series are obtained by treating Bzl-benzanthronyl-thioglycollic acid, or derivatives or substitution products with unoccupied 2-position, with alkaline condensing agents. The products are mainly soluble in alkali and can be precipitated from an aqueous solution by means of weak acids. They may be treated with mild oxidising agents to effect further condensation into blue-green substances having the character of vat dyestuffs. Similar results are obtained by employing the oxidation products, esters, amides and nitriles derived from Bzl-benzanthronyl-thioglycollic acids. Several examples are given.

311,193. SEPARATION OF GASEOUS AND LIQUID PRODUCTS. C. F. R. Harrison, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Millbank, London, S.W.1. Application date, December 31, 1927.

The separation of the gases and vaporous and liquid products from mixtures obtained in high pressure reactions, such

as the hydrogenation of carbonaceous materials at pressures of 100 atmospheres or more, is effected at the reaction pressure and at a temperature high enough to prevent substantial condensation of the vapours. Thereafter, the residual mixture of gas and vapour, still under the reaction pressure, is treated to recover vapours from it by condensation and/or scrubbing. The separated gases and liquids are treated separately for the



311,193

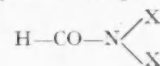
recovery of useful heat energy and pressure energy therefrom. In the arrangement shown diagrammatically in the figure, gas and liquid pass from converter 1 to catch-pot 3 which is kept at a predetermined high temperature and under pressure. The liquid leaves the base of the catch-pot through a cooler or heat-exchanger 4, and the gas passes through a heat-exchanger 7, where the benzene or the like is condensed from it and collects in the cold high-pressure catch-pot 8. The high-pressure separating vessel or catch-pot described in Specification 310,985 is preferably used.

311,194. DYES AND INTERMEDIATES. O. Y. Imray, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, January 4, 1928.

New bis-(2'-oxy-3'-naphthoyl)-arylene-1:4-diamines, containing in the arylid residue substituents in 2 and 5 positions to the amino groups, are obtained by condensing 2:3-oxy-naphthoic acid with correspondingly substituted 1:4-arylene-diamines, advantageously in presence of a dehydrating agent, such as phosphorus trichloride, in a suitable organic diluent, such as toluene. The products are suitable for coupling with unsulphonated diazo, tetrazo, or diazoazo compounds to produce azo dyestuffs in substance, on a substratum, or on the fibre, the dyeings on vegetable fibres ranging from dark red to garnet, violet, and black, and being specially fast to light.

311,208. CYCLIC ALDEHYDES, MANUFACTURE OF. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, February 6, 1928.

Cyclic compounds containing aldehydic groups are obtained by subjecting carbocyclic or heterocyclic compounds containing a labile hydrogen atom, but containing no amino group, to reaction with formylamino compounds of the general formula



in which X is hydrogen or aryl in each case, or one X is aryl and the other alkyl or aralkyl, in presence of an acid condensing agent containing chlorine. Among the carbocyclic and heterocyclic compounds specified are *m*-xylene, *p*-xylene, anthracene, N-ethylcarbazole, pyridine, quinoline, naphthostyryl, anisol, α - and β -naphthol, naphthol ethers, naphthalene-

thio ethers, oxythionaphthenes, and substitution products thereof; and condensing agents which are specially suitable are chlorides and oxychlorides of phosphorus and sulphur, and aluminium chloride. The products have value as intermediates for the production of dyestuffs and pharmaceutical compounds.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention—284,998 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of 2:3-aminonaphthoic acid, see Vol. XVIII, p. 347; 285,000 (I.G. Farbenindustrie Akt.-Ges.) relating to dehydration of vapour mixtures containing acetic anhydride, see Vol. XVIII, p. 348; 285,006 (Soc. of Chemical Industry in Basle) relating to dyestuffs, see Vol. XVIII, p. 348; 285,097 (I.G. Farbenindustrie Akt.-Ges.) relating to mordant dyeing dyestuffs, see Vol. XVIII, p. 368; 288,985 (Imray. From I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of benzanthrone perdicarboxylic acid or its derivatives or substitution products, see Vol. XVIII, p. 581; 297,667 (Boehringer) relating to manufacture of maleic acid and maleic anhydride, see Vol. XIX, p. 519; 299,300 (F. Krupp Grusonwerk Akt.-Ges.) relating to recovery of volatilizable metals from iron-containing materials, see Vol. XX, p. 7 (Metallurgical Section).

International Specifications not yet Accepted

309,379. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date April 8, 1928.

Thioindigo dyes, yielding blue to violet dyeings, are obtained by the condensation of an isatin α -derivative, carrying an alkoxy group in position 5 or 7 and at least one other substituent, with an oxythionaphthene substituted in the benzene nucleus. The isatin chloride may be used, the condensation being effected in benzene, chlorobenzene, or nitrobenzene solution, or an isatin arylide in aqueous suspension or dissolved in alcohol or acetic anhydride may be used.

309,454. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, April 10, 1928. Addition to 309,193 (see THE CHEMICAL AGE, Vol. XX, p. 547).

The compounds described in the parent specification are obtained by a modified process using 2-amino-3-halogen-anthraquinone or their derivatives or substitution products as the starting materials, and heating these in an indifferent solvent such as quinoline with cuprous cyanide to yield the corresponding 2-amino-3-cyanoanthraquinone, which then undergoes the further conversion into the vat dyestuff.

309,487. SYNTHETIC RESINS. Kunstharzfabrik Dr. F. Pollak Ges., 85A, Mollardgasse, Vienna. International Convention date, April 11, 1928.

Resinous products suitable for making varnishes, films, artificial silk, and moulded articles are obtained by mixing urea-formaldehyde or like condensation products with colloidal or semi-colloidal substances, particularly those resulting from the polymerisation of unsaturated organic compounds, e.g., unsaturated hydrocarbons, vinyl esters, acrolein, or itaconic acid.

LATEST NOTIFICATIONS.

312,344. Coating compositions. Du Pont de Nemours and Co., E. I. May 26, 1928.

312,345. Catalytic dehydrogenation. Du Pont De Nemours and Co., E. I. May 26, 1928.

312,347. Manufacture of indigoid vat dyestuffs. I.G. Farbenindustrie Akt.-Ges. and Carpmal. May 26, 1928.

312,227. Catalysts for gas reactions. I.G. Farbenindustrie Akt.-Ges. May 22, 1928.

312,228. Separation of oils, tars and the like from solid constituents. I.G. Farbenindustrie Akt.-Ges. May 22, 1928.

312,232. Process for the manufacture of acetone-soluble cellulose acetates. I.G. Farbenindustrie Akt.-Ges. May 22, 1928.

312,163. Process for the improvement of textiles and the like. I.G. Farbenindustrie Akt.-Ges. May 21, 1928.

312,169. Production of alkali nitrates. Jost, F. May 21, 1928.

312,173. Manufacture of glacial acetic acid from dilute acetic acids. I.G. Farbenindustrie Akt.-Ges. May 18, 1928.

312,174. Manufacture of condensation products from methylene bases of cyclic ammonium salts. Soc. of Chemical Industry in Basle. May 19, 1928.

312,175. Manufacture of acid-wool dyestuffs. I.G. Farbenindustrie Akt.-Ges. May 18, 1928.

312,283. Process for sulphonating fatty acids and fatty acid derivatives. Naamloze Vennootschap Chemische Fabriek Servo, and Rozenbroek, M. D. May 23, 1928.

312,330. Manufacture of dyestuffs. Geigy Akt.-Ges., J. R. May 24, 1928.

312,582. Manufacture of monoazo dyestuffs. Chemische Fabriek Vorm. Sandoz. May 26, 1928.

312,629. Manufacture and production of metal carbonyls. I.G. Farbenindustrie Akt.-Ges. May 29, 1928.

312,902. Manufacture of diphenyl. Federal Phosphorus Co. June 2, 1928.

312,903. Manufacture of phenol formaldehyde condensation products. Kunstharzfabrik Dr. F. Pollak Ges. June 1, 1928.

312,604. Unsymmetrical diphenyl ethane as a plasticiser. Du Pont de Nemours and Co. May 28, 1928.

312,907. Process for preparing thymol. Rheinische Kampfer-Fabrik Ges. June 1, 1928.

312,685. Manufacture of phosphorus chlorides. Urbain, E. May 31, 1928.

312,687. Manufacture of artificial textiles. I.G. Farbenindustrie Akt.-Ges. May 31, 1928.

312,908. Manufacture of hydrogen chloride or hydrogen bromide or their corresponding acid solutions. Röhm and Haas Akt.-Ges. June 2, 1928.

312,664. Process for preparing anhydrous perborates. Schoenberg, Dr. G. May 30, 1928.

312,915. Manufacture of artificial threads or the like. I.G. Farbenindustrie Akt.-Ges. June 2, 1928.

312,919. Process for preparing pyridine alkenes and piperidine alkenes. Boehringer, A. June 1, 1928.

312,684. Production of zinc oxide. Beringer, C. R. May 29, 1928.

312,671. Process for the manufacture of silk from acyl cellulose. I.G. Farbenindustrie Akt.-Ges. May 30, 1928.

Specifications Accepted with Date of Application

284,298. Cellulose esters, Manufacture of. I.G. Farbenindustrie Akt.-Ges. January 27, 1927.

285,486. Dyestuffs of the phenolphthosafranine series, Manufacture of. J. R. Geigy Akt.-Ges. February 19, 1927. Addition to 265,986.

285,833. Thymol, Manufacture of. Schering-Kahlbaum Akt.-Ges. February 22, 1927. Addition to 273,084.

285,858. Cellulose esters, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 23, 1927.

286,226. Azo dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 28, 1927.

286,274. Azo dyestuffs insoluble in water, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 2, 1927.

287,046. Magnesium and its alloys, Process for protecting. G. Michel. March 12, 1927. Addition to 249,484.

288,569. Titanium compounds, Recovery of. Titanium Pigment Co., Inc. April 12, 1927.

293,003. Washing gases and vapours, Process for. I.G. Farbenindustrie Akt.-Ges. June 29, 1927.

302,994. Iron-nickel alloy. F. Krupp Akt.-Ges. December 24, 1927.

306,108. Tin-bearing materials, Treatment of. D. M. S. R., and S. Guggenheim and J. K. MacGowan. February 16, 1928.

308,243 and 309,852. Ammonium sulphate, Process of producing by the treatment with gypsum of an ammoniacal solution used for the scrubbing of gases. Union Chimique Belge Soc. Anon. March 20, 1928, and April 16, 1928, respectively. Additions to 307,037 and 308,243.

312,093. Dyes and dyeing. R. S. Barnes, J. E. G. Harris, J. Thomas, and Scottish Dyes, Ltd., November 19, 1927.

312,095-6. Cellulose esters, Manufacture of. H. Dreyfus. December 17, 1927.

312,097. Chromium compounds, Manufacture of. I.G. Farbenindustrie Akt.-Ges., and K. and K. S. Carpmal. December 20, 1927. Addition to 259,447.

312,098. Cellulose esters and products therefrom, Production of. H. Dreyfus. January 14, 1928.

312,126. Cast iron, Manufacture of. H. D. Elkington (*Mechanite Metal Corporation*). February 20, 1928.

312,200. Noxious and other fumes, Method of and means for treating. L. S. Fraser and F. L. Rich. December 19, 1927.

312,201. Products of latex-like character, Preparation of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). December 19, 1927.

312,243. Sulphuric acid esters of aminoanthraquinones. Production of. D. A. W. Fairweather, J. Thomas, and Scottish Dyes, Ltd. November 18, 1927.

312,246. Aromatic polyhydroxy compounds containing mercury. A. Carpmal (*I.G. Farbenindustrie Akt.-Ges.*). January 18, 1928.

312,289. Aminohalogenanthraquinones, Manufacture of. E. G. Beckett, W. G. Woodcock, J. Thomas, and Scottish Dyes, Ltd. November 21, 1927.

- 312,297. Azo dyestuffs, Manufacture of. O. Y. Imray (*I.G. Farbenindustrie Akt.-Ges.*). February 21, 1928.
- 312,383. Separation of oils from mixtures of the same with solid substances. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). February 22, 1928.
- 312,388. Oxygenated organic compounds, Manufacture of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). February 24, 1928.
- 312,395 and 312,403. Electrodeposition of metals. Electro Bleach and By-Products, Ltd., J. Hollins, and D. Jepson. February 25, 1928.
- 312,405. Soap and saponaceous materials, Manufacture of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). June 8, 1928.
- 312,441. Nickel iron alloys, Manufacture of. General Electric Co., Ltd., and R. W. W. Sanderson. March 29, 1928.
- 312,512. Synthetic butyl alcohol, Process for the purification of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). June 20, 1928.
- 312,533. Fixed gases and condensable hydrocarbon fluids, Manufacture of, from bituminous materials by fractional disintegration. A. G. Meeze. July 10, 1928.
- 312,555. Aluminium alloy. H. C. Hall and T. F. Bradbury. September 11, 1928. Addition to 300,078.

Applications for Patents

- Barnes, R. S., Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Dyestuffs. 16,805. May 31.
- Barnes, R. S., Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Dyestuffs. 16,903. June 1.
- Bataafsche Petroleum Maatschappij and Elkington, H. D. Manufacture of butyl alcohol. 16,470. May 28.
- Bataafsche Petroleum Maatschappij, and Elkington, H. D. Process for absorbing ethylene, etc. 17,165. June 4.
- Bataafsche Petroleum Maatschappij, and Elkington, H. D. Process for absorbing olefines, etc. 17,166. June 4.
- Bataafsche Petroleum Maatschappij, and Elkington, H. D. Manufacture of alcohols. 17,167. June 4.
- Bataafsche Petroleum Maatschappij, and Elkington, H. D. Converting hydrocarbons. 17,599. June 7.
- Bennett, N., Dodd, H., Holt, F., Imperial Chemical Industries, Ltd., and Sprent, W. C. Manufacture of benzyle chloride. 16,909, 16,910. June 1.
- Berlinger, C. R. Production of zinc oxide. 16,562. May 29. (Hungary, May 29, 1928.)
- Boehringer, A., and Boehringer Sohn, C. H. Preparing pyridine alkalines and piperidine alkalines. 16,551. May 29. (Germany, June 1, 1928.)
- British Celanese, Ltd., Ellis, G. H., Mosby, D. H., and Olpin, H. C. Manufacture of dyestuffs. 17,024. June 4. (June 18, 1928.)
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Removing metal carbides from soot. 16,314. May 27.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Process for protecting wool, etc., from moth. 16,315. May 27.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Preserving wood. 16,447. May 28.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Dyeing artificial silk from regenerated cellulose. 16,677. May 30.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of carbohydrate compounds. 17,123. June 4.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Cellulose materials. 17,124. June 4.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of artificial rubber, etc. 17,310. June 5.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of complex iron salts. 17,311. June 5.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of substances of therapeutic value. 17,312. June 5.
- Chemische Fabrik Kalk Ges., and Oehme, H. Manufacture of carbon bisulphide. 17,214. June 5. (Germany, June 23, 1928.)
- Chemische Fabrik Kalk Ges., and Oehme, H. Manufacture of carbon bisulphide. 17,215. June 5. (Germany, October 2, 1928.)
- Chemische Fabrik vorm. Sandoz. Manufacture of monoazo dyestuffs. 16,327. May 27. (Germany, May 26, 1928.)
- Chemische Fabrik vorm. Sandoz. Manufacture of polyazo dyestuffs. 17,183. June 4. (Germany, June 14, 1928.)
- Du Pont de Nemours and Co., E. I. Catalytic hydrogenation, etc., of organic compounds. 17,404. June 6. (United States, June 6, 1928.)
- Etridge, J. J. Preparation of stannic oxide gels. 17,213. June 5.
- Hooley, L. J., Scottish Dyes, Ltd., and Thomas, J. Condensation products, etc. 17,186. June 4.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of coloured articles. 16,272. May 27.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture, etc., of layers sensitive to light. 16,273. May 27.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Colouring rubber oil substitute, etc. 16,528. May 29.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Secondary cells. 16,529. May 29.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Vat dyestuffs. 16,694, 16,698. May 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Hydrocarbons. 16,695. May 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Ammonia. 16,696. May 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Conversion of hydrocarbons. 16,697. May 30.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of organic compounds containing oxygen. 16,810. May 31. (September 1, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Photographic roll-films. 16,262. May 27.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of artificial threads, etc. 16,420. May 28. (Germany, June 2, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of stable polymerization products from vinyl esters. 16,538. May 29. (Germany, September 26, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of silk from acyl cellulose. 16,602. May 29. (Germany, May 30, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of vulcanised fibres, etc. 16,830. May 31. (Germany, June 4, 1928.)
- I.G. Farbenindustrie Akt.-Ges. High-gloss drying apparatus for papers. 16,843. May 31.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of artificial materials. 17,097. June 4.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Substitutes for soap. 17,098. June 4.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of derivatives of naphthalene. 17,099, 17,101. June 4.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of vat dyestuffs. 17,100. June 4.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of halogen derivatives of the dibenzanthrone series. 17,102. June 4.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of granular mixed fertilisers. 17,105. June 4. (September 21, 1928.)
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of organic compounds by dehydrogenation. 17,266. June 5.
- I.G. Farbenindustrie Akt.-Ges. Film holders. 17,270. June 5.
- I.G. Farbenindustrie Akt.-Ges. Kinematograph projection apparatus. 17,271. June 5.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of anthanthrone derivatives. 17,339. June 6. (August 25, 1928.)
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Separation of finely divided impurities from liquid. 17,549. June 7.
- I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Colouring preparations, etc. 17,684. June 8.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of primary, etc., amines. 17,273. June 5. (Germany, November 1, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Smoothing paper. 17,412. June 6. (Germany, October 19, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 17,413. June 6. (Germany, June 6, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of artificial rubber-like masses. 17,428. June 6. (Germany, June 11, 1928.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of indigoid vat dyestuffs. 17,625. June 7. (Germany, June 12, 1928.)
- Imperial Chemical Industries, Ltd. Production of concentrated caustic alkalies. 16,244. May 27.
- Imperial Chemical Industries, Ltd. Nitrocellulose. 16,333. May 27.
- Imperial Chemical Industries, Ltd. Refining petrol, etc. 16,772. May 31.
- Imperial Chemical Industries, Ltd. Catalytic material. 16,900. June 1.
- Imperial Chemical Industries, Ltd., McAulay, J., and Wheeler, T. S. Pyrolysis of unsaturated hydrocarbon. 17,007. June 4.
- Imperial Chemical Industries, Ltd. Preparation of Stannic oxide gels. 17,213. June 5.
- Imperial Chemical Industries, Ltd. Reducing viscosity of cellulose derivatives. 17,361. June 6. (United States, June 6, 1928.)
- International Industrial and Chemical Co., Ltd. Barium compounds. 16,689. May 30.
- Moulton, H. F., and Tschudin, E. Manufacture of nitrocellulose. 17,435, 17,436. June 6.
- Röhm and Haas Akt.-Ges. Production of unsaturated esters. 17,556. June 7. (Germany, June 18, 1928.)
- Selden Co. Contact sulphuric-acid process. 16,230. May 27. (United States, July 3, 1928.)
- Selden Co. Catalytic oxidation of organic compounds. 16,524. May 29. (United States, July 21, 1928.)
- Soc. of Chemical Industry in Basle. Manufacture of azo-dyestuffs, etc. 17,414. June 6. (Switzerland, July 26, 1927.)
- Soc. of Chemical Industry in Basle. Treatment of metals with acid liquids. 17,551. June 7. (Switzerland, June 7, 1928.)
- Towarzystwo Zakladow Chemicznych Strem Spolka Akcyjna. Device for mechanically emptying superphosphate chambers. 17,182. June 4.
- Winter, R. M. Production of concentrated caustic alkalies. 16,244. May 27.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2 cwt. bags carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex-wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall.
 ACID CRESYLIC 99/100.—2s. 3d. to 2s. 8d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 1s. 11d. per gall. Dark, 1s. 7½d. to 1s. 8½d.
 ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.
 ANTHRACENE OIL, STRAINED, 1080/1090.—5½d. to 6d. per gall. 1100, 6d. to 6½d. per gall.; 1110, 6½d. per gall. Unstrained, 6½d. to 7d. per gall.
 BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.
 TOLUOLE.—90%, 1s. 7½d. to 2s. per gall. Firm. Pure, 2s. to 2s. 2d. per gall.
 XYLOL.—1s. 5d. to 2s. per gall. Pure, 1s. 8d. to 1s. 9d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 7½d. to 7¾d. per gall.; Heavy, 6½d. to 6¾d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3½d. to 4½d. per gall. Light gravity, 2½d. to 2¾d. per gall. ex works. Salty, 7½d. per gall.
 NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent, 90/160, 1s. 3½d. to 1s. 4d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 7d. per gall. Solvent 90/190, 1s. 1d. to 1s. 4d. per gall.
 NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.
 NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet Flaked, £14 to £15 per ton, according to districts.
 PITCH.—Medium soft, 34s. to 37s. 6d. per ton, f.o.b., according to district. Nominal.
 PYRIDINE.—90/140, 4s. to 4s. 3d. per gall. 90/160, 3s. 9d. to 4s. per gall. 90/180, 2s. to 2s. 6d. per gall. Heavy, 1s. 6d. to 1s. 9d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 8½d. per lb.
 ACID GAMMA.—4s. 6d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—8d. per lb. naked at works.
 ANILINE SALTS.—8d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.
 DICHLORANILINE.—1s. 10d. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—10d. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb.
 p-TOLUIDINE.—1s. 9d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
 N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.
 ACETONE.—£78 per ton.
 CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.
 IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.
 WOOD CRESOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.
 WOOD TAR.—£3 10s. to £4 10s. per ton.
 BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£5 10s. to £7 per ton, according to quality.
 CADMIUM SULPHIDE.—5s. to 6s. per lb.
 CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4½d. to 5½d. per lb.
 LAMP BLACK.—£32 10s. per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£23 per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£10 to £12 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B. P.—£55 to £60 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.
 ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 6d. to 2s. 8d. per lb.
 ACID, BENZOIC, B.P. 2s. to 3s. 3d. per lb., according to quantity.
 Solely ex Gum, 1s. 3d. to 1s. 4d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. 1d. to 2s. 2d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. per lb.

BISMUTH CITRATE.—9s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 9d. per lb.

BISMUTH SUBNITRATE.—8s. 3d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.

BISMUTH OXIDE.—12s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 1s. 11½d. per lb.; potassium, 1s. 11½d. per lb.; granular, 1s. 10½d. per lb.; sodium, 2s. 1½d. per lb.

CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3½d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchester, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 2s. 9d. to 3s. per lb. U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 20s. 6d. per lb. net; Synthetic, 11s. to 12s. per lb.; Synthetic detached crystals 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 5d. to 1s. 8d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—3s. 11d. to 4s. 2d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—97s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—47s. per lb.; in quantity lower.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 5d. per lb. Crystal, 2s. 3d. to 2s. 6d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—14s. per lb.

COUMARIN.—9s. per lb.

CITRONELLOL.—10s. per lb.

CITRAL.—8s. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—12s. 6d. per lb.

GERANIOL (PALMAROSA).—21s. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—14s. 3d. per lb.

LINALOL.—Ex Bois de Rose, 12s. 6d. per lb. Ex Shui Oil, 10s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.

METHYL ANTHRANILATE.—8s. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—34s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—52s. per lb.

SAFROL.—2s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—18s. per lb. Ex Guaiacol, 15s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—3s. per lb.

BERGAMOT OIL.—18s. 9d. per lb.

BOURBON GERANIUM OIL.—21s. per lb.

CAMPOR OIL (White).—1s. 1d. per lb.

CANANGA OIL, JAVA.—11s. 6d. per lb.

CASSIA OIL, 80/85%.—6s. 3d. per lb.

CINNAMON OIL LEAF.—9s. per oz.

CITRONELLA OIL.—Java, 2s. 6d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 4d. per lb.

CLOVE OIL (90/92%).—9s. 9d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10½d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 17s. 6d. per lb.

LEMON OIL.—17s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—25s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 14s. per lb.; Japanese, 7s. 6d. per lb.

PETITGRAIN.—8s. 6d. per lb.

SANDALWOOD.—Mysore, 30s. per lb.; 90/95%, 20s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, June 13, 1929.

BUSINESS has been steady during the current week, and prices remain practically unchanged. Export business has also been steady.

General Chemicals

ACETONE is firm at £75 to £85 per ton, according to quality.
ACETIC ACID.—This is in very short supply, and prices remain firm at £36 10s. to £37 10s. for the 80% technical quality.
CITRIC ACID.—Firm at 2s. 2d. to 2s. 3d. per lb.
FORMIC ACID.—In little better demand; price unchanged at about £42 per ton for the 85%.
LACTIC ACID is quiet at £43 per ton for the 50%, by weight.
OXALIC ACID.—The improved demand continues, and prices remain firm at £30 10s. to £32 10s. per ton.
TARTARIC ACID.—The demand is increasing, and prices are firm at 1s. 4½d. per lb., less 5%.
SULPHATE/ALUMINA.—Supplies still short; prices very firm at £7 15s. to £8 per ton.
ARSENIC.—Steady at £16 5s., free on rails mines.
BARIUM CHLORIDE.—Continues very firm and in short supply, price firm at £11 10s. per ton.
CREAM OF TARTAR is firm at £98 to £100 per ton for B.P. 99/100%, with an active demand.
COPPER SULPHATE.—In good demand and firm at about £27 to £28 per ton.
FORMALDEHYDE.—In good demand and steady at £39 per ton.
LEAD ACETATE.—Steady at £44 for white and £43 per ton for brown.
LEAD NITRATE is still somewhat slow at about £33 15s. per ton.
LIME ACETATE.—Steady at £18 per ton.
LITHOPONE.—£19 15s. to £22 per ton.
METHYL ACETONE.—The increased demand continues, with prices firm at £58 to £60 per ton.
POTASSIUM CHLORATE.—Steady at £28 to £30 per ton.

Nitrogen Products

Sulphate of Ammonia.—During the past week the price has remained steady at £9 1s. 3d. per ton in single bags for neutral quality 20-6% nitrogen. Buyers are continuing to hold off until the large Continental producers have announced their price scale for the coming season.

Home.—It is understood that the buying for prompt consumption is very small, but that there are some inquiries for next season for mixing purposes.

Nitrate of Soda.—There is no change to report.

Latest Oil Prices

LONDON, June 12.—LINSEED OIL was quiet. Spot, ex mill, £29; June to August, £27 17s. 6d.; September-December, £28 2s. 6d.; January-April, £28 10s., naked. RAPE OIL was inactive. Crude extracted, £40 15s.; technical, refined, £42 15s., naked, ex wharf. COTTON OIL was steady. Bombay crude, £26; Egyptian crude, £26 10s.; refined common edible, £32; deodorised, £34, naked, ex mill. TURPENTINE was steady and unchanged. American, spot, 45s. 3d.; June 43s. 6d.; July-December, 42s. 3d. per cwt.

HULL.—LINSEED OIL.—Spot to July-August, £28 7s. 6d.; September-December, £28 5s. per ton, naked. COTTON OIL.—Bombay crude spot, £27; Egyptian crude spot (new), £27 10s.; June-August, £27; edible refined spot £30 15s.; technical, spot, £30 10s.; deodorised spot, £32 15s. per ton, naked. PALM KERNEL OIL.—Crude 5½ per cent., £31 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £32 5s.; deodorised, £36 5s. per ton. SOYA OIL.—Extracted and crushed, £30; deodorised, £33 10s. per ton. RAPE OIL.—Crushed/extracted, £40 10s.; refined, £42 10s. per ton, net cash terms, ex mill. TURPENTINE, CASTOR OIL and COD OIL unaltered.

South Wales By-Products

SOUTH Wales by-product activities are unchanged, the market generally being unsatisfactory. The demand for pitch remains quiet, but supplies are not freely offered and values are steady on a basis of from 34s. to 36s. per ton. Road tar is slightly better, but prices are unchanged at from 10s. 6d. to 13s. 6d. per 40-gallon barrel. Crude tar has a steady, but small, demand round about

POTASSIUM PERMANGANATE.—In brisk demand at 5½d. per lb., B.P. quality.

POTASSIUM PRUSSATE.—Firm at £63 10s. to £65 10s. per ton.

SODIUM ACETATE CRYSTALS.—Firm at £22 10s. to £23 per ton, with crystals still in short supply.

SODIUM BICHROMATE.—Firm at 3½d. per lb. (with discounts for contracts), and in good demand.

SODIUM HYPOSULPHITE.—Commercial still slow. The demand for "Pea" crystals continues, price firm at about £14 10s. to £15 per ton.

SODIUM NITRITE.—Steady and unchanged at about £20 per ton.

SODIUM PHOSPHATE.—£12 per ton for dibasic and £16 10s. for tribasic.

SODIUM PRUSSATE.—Firm at 4½d. to 5½d. per lb., in good demand.

TARTAR EMETIC.—There is an improved demand, price unchanged at about 11½d. per lb.

ZINC SULPHATE.—Unchanged at about £12 per ton.

Coal Tar Products

The prices of coal tar products remain about the same as last week, and whilst there is still very little inquiry, there is, on the other hand, no great quantity of any coal tar product, with the exception of creosote oil, available.

MOTOR BENZOL remains at 1s. 7d. to 1s. 7½d. per gallon, f.o.r. makers' works.

SOLVENT NAPHTHA is quoted at 1s. 2½d. to 1s. 3d. per gallon.

HEAVY NAPHTHA is unchanged at 1s. 2d. per gallon, f.o.r.

CREOSOTE OIL remains at 3½d. to 4d. per gallon in the North, and at 4½d. to 5d. per gallon in London.

CRESYLIC ACID is quoted at about 1s. 10d. per gallon for the 98/100% quality, and at about 1s. 8d. per gallon for the dark quality 95/97%.

NAPHTHALENES.—The firefighter quality remains at about £4 10s. per ton, the 74/76 quality at about £5 per ton, and the 76/78 quality at £6 to £6 5s. per ton.

PITCH.—There is no change in the forward market, which remains at a nominal figure of 35s. to 37s. 6d. per ton, f.o.b. East Coast.

24s. to 28s. per ton. Creosote is unchanged, the market being weak with quotations ranging from 3½d. to 4½d. per gallon. Refined tars continue to have a steady and moderate call, with prices for gasworks and coke-oven tar unchanged. Solvent naphtha is firm round the 1s. 3½d. to 1s. 6d. per gallon mark, but heavy naphtha remains weak at 11d. to 1s. 1d. per gallon. Motor benzol has fallen back slightly, but there is no variation in quotations from 1s. 6d. to 1s. 8d. per gallon. Crude naphthalene is in poor demand round the 80s. per ton mark, and a similar remark applies to whizzed round about 100s. per ton. Patent fuel and coke exports are fairly good, but quotations are unchanged. Patent fuel, ex-ship Cardiff, 21s. to 21s. 6d.; ex-ship Swansea, 20s. to 20s. 6d. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 26s. 6d. to 32s., and furnace from 21s. to 23s. per ton. Oil imports for the last four ascertainable weeks totalled 26,688,740 gallons.

Nitrate Price Protection Scheme

THE Chilean Nitrate of Soda Producers' Association offers to dealers the benefits of a scheme of price protection on stocks carried forward unsold on June 30, 1929. Dealers who wish to participate are invited to apply to the Delegation for Great Britain and Ireland of the Association, Friars House, New Broad Street, London, E.C. 2, to be placed on the list of "approved dealers." Subject to various obligations being faithfully executed, an "approved dealer" shall be entitled to claim, under certain specified conditions, from the delegation an indemnity on stocks of Chilean nitrate held by him unsold and his own property on June 30, 1929. The scheme applies also to stocks held by industrial users of Chilean nitrate of soda. Full particulars can be obtained from the Delegation.

New Canadian Company

IN Saskatoon, Saskatchewan, Canada, there has been formed the Amalgamated Chemical and Fertilizer Co., Ltd. It intends to establish a factory at a cost of about \$150,000 for the manufacture of chemical fertilisers, sulphuric acid, weed-killer and other heavy chemicals. A plant has been purchased and negotiations are now being conducted with American manufacturers of fertiliser plant. It is understood that the company will specialise in the manufacture of superphosphate, obtaining phosphate rock from Alberta and Montana and making sulphuric acid from ore obtained in the Flin Flon district.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, June 12, 1929.

BUSINESS in the heavy chemical market during the last week has been very brisk, good inquiry both for home and export business being received. Prices remain on practically the same level as last reported.

Industrial Chemicals

ACETONE.—B.G.S., £76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—98/100% Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC ICE CRYSTALS.—Unchanged at 6½d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Quoted 2s. 2½d. per lb., less 5%, ex store, spot delivery. Offered at 2s. 2½d. per lb., less 5% ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80% QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Price remains unchanged at about 3½d. per lb., ex store. Offered for prompt shipment from the Continent at 3½d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 158° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Spot material now quoted 1s. 4½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—In scarce demand and price now quoted about £7 per ton, ex wharf.

ALUM LUMP POTASH.—Unchanged at about £8 12s. 6d. per ton, c.i.f. U.K. ports. Crystals meal offered on spot at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 88%.—Unchanged at about 2½d. to 3d. per lb. delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Quoted £37 per ton, c.i.f. U.K. ports, prompt shipment from China. Spot material unchanged at about £40 per ton, ex store.

ARSENIC, WHITE POWDERED.—Unchanged at £18 5s. per ton, ex wharf, prompt despatch from mines. Spot material quoted £19 15s. per ton, ex store.

BARIUM CHLORIDE.—Quoted £10 10s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4 ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Still in fairly good demand and price now quoted is £36 10s. per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—On offer at £29 15s. per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 10s. per ton; brown on offer at about £39 10s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon less 2½ per cent. delivered.

POTASSIUM BICROMATE.—Quoted 4½d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE 96/98%.—Spot material now quoted £26 10s. per ton, ex store. Offered from the continent £25 10s. per ton, c.i.f. U.K.

POTASSIUM CHLORATE 99½/100% Powder.—Quoted £25 10s. per ton, ex wharf. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.

POTASSIUM PRUSSIAN (YELLOW).—Offered for prompt shipment from the Continent at 6½d. per lb., ex wharf. Spot material quoted 7d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%. Now £17 10s. per ton in drums; £18 15s. per ton in casks. Solid 76/77%, £14 10s. per ton in drums and 70/75%, £14 2s. 6d. per ton in drums, all carriage paid buyers' stations, minimum 4 ton lots; for contracts, 10s. per ton less.

SODIUM ACETATE.—65% quality quoted about £19 15s. per ton, ex wharf. 73/78% Anhydrous quality on offer at £20 per ton, carriage paid, buyers' stations.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICROMATE.—Manufacturers advise an advance in price of ½d. per lb., making the spot price now 3½d. per lb., delivered as from July 1, with special concession for contracts from 2½ tons up to 25 tons.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 1s. 3d. per ton, ex quay, minimum 4 ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4 tons lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4 ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Ordinary quality quoted £10 12s. per ton, carriage paid, buyers' sidings, minimum 6 tons lots, usual extras for small quantities and refined qualities.

SODIUM PRUSSIAN.—Spot material quoted 7d. per lb. Offered for prompt shipment from the Continent at 6½d. per lb., c.i.f. U.K. ports.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62%, £9 per ton. Broken, 60/63%, £10 per ton. Crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4 ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now quoted at £22 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

Scientific Management

International Congress in Paris

THE attempts which have been made of recent years to co-ordinate the work of many national and private bodies on scientific management have lately resulted in a centralisation of this work under the International Institution of Scientific Management at Geneva, to which a considerable measure of official recognition has been accorded by the recommendations of the Second Consultative Economic Committee of the League of Nations.

A parallel and allied feature of this movement is the series of international congresses on the subject, the fourth of which will be held in Paris from June 19 to 23. These congresses began at Prague in 1924, the second and third being held in Brussels and Rome respectively in 1925 and 1927, in each case under the patronage of the head of the State concerned. Thus in Paris the congress will be held under the patronage of the President of the French Republic, and will be organised by the French National Committee. The congress will be divided into six sections sitting separately.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, June 13, 1929.

THE movement of chemical products on this market on account of the cotton, textile and allied industries has been on relatively quiet lines during the past week, although there has been some indication of improvement in respect of the demands of the woollen industry. In other directions, the demand for chemicals is on a fairly satisfactory scale and delivery specifications against contracts account for reasonably good quantities in the aggregate. In the open market transactions have been largely confined to small to medium quantities.

Heavy Chemicals

A steady business is passing in bicarbonate of soda at firm prices, makers still asking round £10 10s. per ton as the basis of contract lots. There is only a moderate inquiry about for saltcake, but at up to £2 15s. per ton values in this section keep up. Bichromate of soda is moving off in fair quantities, both against contracts and for prompt parcels, and quotations are firm at about 3½d. per lb. There is a fair movement of prussiate of soda, and here, also, prices keep up at from 4½d. to 5d. per lb., according to quantity. Caustic soda meets with a steady demand, with contract offers still ranging from £12 15s. to £14 per ton. A quiet trade is being put through in the case of phosphate of soda at round £12 per ton. With regard to hyposulphite of soda, this meets with a moderate volume of buying interest, with the photographic quality on offer at £15 10s. per ton, and the commercial at £8 15s. to £9. There is a quiet demand about for chlorate of soda, which is quoted here at from 2½d. to 2¾d. per lb. Sulphide of sodium is on the quiet side still, but quotations in this section have been maintained, the 60-65 per cent. concentrated solid quality being offered at about £9 per ton and the commercial kind at £8 per ton. Alkali keeps firm and a moderate amount of business is passing at round £6 per ton.

A steady inquiry is reported in the case of bichromate of potash, values of which are firmly maintained in the neighbourhood of 4½d. per lb. Yellow prussiate of potash continues very steady at from 6½d. to 7½d. per lb., according to quantity, and a fair amount of buying interest is being displayed in this material. Chlorate of potash, however, is still only in moderate request, although at about 3½d. per lb. quotations keep steady. Caustic potash attracts a fair amount of attention and offers are unchanged at from £33 5s. per ton for prompt delivery of one to five-ton lots. There has been little alteration on the week in the position of carbonate of potash; business is on quietly steady lines with current offers at round £26 5s. per ton. Permanganate of potash is in moderate inquiry, with the B.P. quality quoted at up to 5½d. per lb. and the commercial grade at about 5½d. per lb.

The demand for arsenic during the past week has been about on the same quiet lines as of late, with prices easy in tendency, although not actually changed since last report at round £16 per ton for white powdered, Cornish makes. A moderate business continues to be done in sulphate of copper, with current offers of this material at £28 per ton, f.o.b. There is a quiet demand about for acetate of lime, with the grey quality quoted at about £16 15s. per ton and the brown at £8 to £8 10s. Nitrate of lead is on offer at £34 5s. per ton, with white acetate at about £40 per ton and brown at from £39 to £39 10s.

Acids and Tar Products

Tartaric acid meets with a fair amount of inquiry and values are firm in tendency at about 1s. 4½d. per lb. A quiet trade is passing in the case of citric acid, which is quoted here at 2s. 2d. per lb. Acetic acid continues to meet with a steady demand, and prices are well maintained at about £67 per ton for the glacial quality and round £36 per ton for the 80 per cent. commercial. Offers of oxalic acid are on a steady basis, although there is not a great deal of buying interest being shown in this section of the market; prices this week have been at £1 11s. 6d. per cwt., ex store.

Among the by-products, pitch continues to meet with inquiry on forward delivery account, with makers holding firm at round £1 16s. per ton, f.o.b. Creosote oil is in comparatively slow demand and prices are weak at 2½d. per gallon, naked. Car-

bolic acid crystals are in steady request, and values are firm at 6½d. per lb., f.o.b. Crude carbolic acid, also, is fully maintained at about 1s. 11d. per gallon. A fair trade is going through in solvent naphtha at round 1s. 3d. per gallon.

Company News

ESPERANZA COPPER AND SULPHUR CO.—The profits for the year amount to £16,874, plus £9,918 brought in. A dividend of 7 per cent., less tax, is recommended, payable on June 29.

UNITED INDIGO AND CHEMICAL CO., LTD.—At a meeting of the directors held on May 28, it was decided that a dividend at the rate of five per cent. per annum, subject to income tax at 4s. in the £, for the six months ending June 30, be paid in respect of the preference shares, and that the preference transfer books be closed from June 21 to 28 inclusive.

BLEACHERS' ASSOCIATION.—The report for the year ended March 31 last shows that after deducting the usual charges and £200,000, as last year, for depreciation, the available balance, including £298,072 brought forward, is £898,178, thereby indicating that the net profit is £600,106, which compares with £597,327 for 1927-28. A final dividend of 1s. 6d. per share is recommended on the ordinary shares, thus maintaining a total distribution of 2s. per share for the year, while the general reserve allocation is £25,000 more than a year ago at £100,000, bringing that fund up to £975,000, the balance forward being £282,818.

UNITED PREMIER OIL AND CAKE CO.—The net profits for the past year amount to £47,202, against £47,428. The question of depreciations of buildings, plant, machinery, etc. of subsidiary companies has again been carefully considered, and having regard to the accumulated reserves and the fact that the plant, etc. of the various companies is still maintained out of revenue, the directors have not deemed it necessary, except in certain cases, to make any further provision for this purpose. The amount brought forward was £14,409, making £61,611, and after deducting preference dividend there is a balance of £27,180, which the directors recommend to be carried forward.

FORSTER'S GLASS CO.—The trading profit for the year ended March 31, 1929, after charging £21,142 for depreciation, amounts to £50,282. To directors' fees, debenture and bank interest is allocated £11,729, to cost of reconstruction £870, the dividend on preference shares for the year requires £13,125, and to reserve account is placed £10,000, leaving £14,557. The directors recommend that a dividend at the rate of 5 per cent. per annum be paid on the ordinary shares, absorbing £4,375, the first to be paid since 1920-21, and that the balance of £10,182 be carried forward. To meet the extension of the company's business additional financial arrangements are necessary, and, as these require the sanction of the preference shareholders, a separate meeting of that class has been called, when proposals will be submitted.

AMALGAMATED ZINC (DE BAVAY'S).—For the half-year ended December 31 the report states that the profit amounted to £15,787, consisting of £6,444 interest earned, etc., and £11,871, dividends received on shares in other companies, less the usual profit and loss debits. This profit, added to the credit balance of £6,349, made available £22,137, of which £14,137 has been transferred to equalisation reserve, and £8,000 of the profits of the half-year carried forward in appropriation account. Since the close of the half-year a further dividend (No. 44) at the rate of 8 per cent. per annum, absorbing £8,000, has been paid. In addition to the sum of £11,871, further dividends, totalling £3,381, have, since the close of the half-year, been received. The surplus of liquid assets at December 31 amounted to £239,120.

Japanese Sulphur Production

JAPAN'S sulphur output in 1928 (66,619 metric tons) represented an increase of 40 per cent. over the average production (47,421 tons) for 1924, 1925 and 1926. During the stabilisation period after the war, Japan's sulphur production for 1921, 1922 and 1923 averaged 36,216 metric tons. Exports of sulphur by Japan in 1924, 1925 and 1926 averaged about 4,000 metric tons, chiefly to China.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

ANGUS CHEMICAL CO., Quarry Works, Dudley Hill Road, Undercliffe, Bradford, chemical manufacturers. (C.C., 15/6/29. £19 19s. 1d. April 30.

WOODBROOK DRUG CO., 53, Graisle Street, Wolverhampton, drug manufacturers. (C.C., 15/6/29.) £16 7s. 8d. April 27.

Deed of Arrangement

[The following deeds of arrangement with creditors have been filed under the Deeds of Arrangement Act, 1914. Under this Act it is necessary that private arrangements other than those executed in pursuance of the Bankruptcy Act shall be registered within seven clear days after the first execution by the debtor or any creditor. These figures are taken from the affidavit filed with the registered deed, but may be subject to variation on realisation.]

MCDUGALL-SMITH, Joseph, trading as MERSEY VARNISH CO., Park Varnish Works, Garden Lane, Bootle, varnish manufacturer. (D.A., 15/6/29.) Dated June 3, filed June 10. Trustee, G. H. Highcock, 3, Rumford Place, Liverpool, accountant. Secured creditors, £458; liabilities unsecured, £1,896; assets, less secured claims, £1,530.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

ALLIED MAGNESITE INDUSTRIES (EUBOEA), LTD., London, S.W. (M., 15/6/29.) Registered May 27, £3,255 debentures; general charge. *£24,763. December 31, 1928.

COMPRI-VENA, LTD., London, W., manufacturers of medicines, etc. (M., 15/6/29.) Registered May 15, series of £3,000 debentures, present issue £2,500; general charge.

DISTAS, LTD., London, W., disinfectant merchants. (M., 15/6/29.) Registered May 16, £100 debenture, to F. E. Gibson, 53, Walm Lane, Cricklewood, company director; general charge.

JOHNSON (J. H.) (SALFORD), LTD., dyers and cleaners. (M., 15/6/29.) Registered June 1, £1,500 debenture, to Mrs. E. Johnson, 34, Bromley Road, Lytham St. Annes; general charge. *£1,500. December 17, 1928.

MORTIMERS (PLYMOUTH), LTD., dyers. (M., 15/6/29.) Registered May 27, £7,000 mortgage, to Miss L. Mortimer, 20, Leigham Street, Plymouth, and another; charged on properties in Barnstable, etc. *£2,750. April 10, 1928.

SHIP CARBON CO. OF GREAT BRITAIN, LTD., London, E.C. (M., 15/6/29.) Registered May 22, £30,000 debenture, to United Ebonite Manufacturers, Ltd., 31-33, Bishopsgate, E.C.; general charge. *—, January 14, 1929.

WILLIAMS (JOHN E.) AND CO., LTD., Partington, colour and paint manufacturers. (M., 15/6/29.) Registered May 16, mortgage, to National Provincial Bank, Ltd., securing all moneys due or to become due to the bank; charged on properties in Lavender Street and Lower Moss Lane, Hulme, Manchester, etc. *£2,500. March 30, 1929.

Satisfactions

HOLDEN WOOD BLEACHING CO., LTD., Haslingden. (M.S., 15/6/29.) Satisfactions registered May 21, all moneys,

etc., registered October 2, 1908; also registered May 25, £10,000, registered November 2, 1909.

LEVER BROTHERS, LTD., Port Sunlight, soap manufacturers. (M.S., 15/6/29.) Satisfaction registered May 27, £63,500, part of amount registered April 13, 1921.

London Gazette, &c.

Companies Winding Up Voluntarily

GELATINE MANUFACTURING CO., LTD. (C.W.U.V., 15/6/29.) By special resolution, May 10th, confirmed May 17, Eric L. Donald, Chartered Accountant, Atlantic House, 46, Holborn Viaduct, London, E.C.1, appointed as liquidator.

WHARRAM (W. A.), LTD. (C.W.U.V., 15/6/29.) By special resolutions, May 14, confirmed May 19, C. H. Beevers, 26, Park Row, Leeds, appointed as liquidator.

Partnership Dissolved

LIDDELL, W. L., trading as GEORGE STIRLING AND CO., wholesale chemists, 59, Lanark Street, Glasgow. Business sold as on May 25 last to J. Mitchell Wilson, manufacturing chemist, of 269, Main Street, Gorbals, Glasgow.

Receivership

CHEMICAL AND DETERGENT CO., LTD. (R., 15/6/29.) A. S. Darr, of Oxford House, 9-15, Oxford Street, W., was appointed receiver on May 23, 1929, under powers contained in debenture dated March 20, 1929.

New Companies Registered

THE BRITISH RADIUM PRODUCTION TRUST, LTD. Registered as a "public" company on June 6. Nom. capital, £1,000 in 5s. shares. The objects are to search for, win, and produce uranium ore, pitchblende and other radium-bearing minerals or earths, to prepare concentrates and extract radium from the same in any part of the world, to acquire uranium bearing lands and generally to carry on the business of a radium mining and production company. Secretary, J. J. B. Cross, 92, Regent Street, London, W.1.

CHEMICAL SERVICE CO., LTD., 43, Parker Street, Kingsway, London. Registered June 10. Nom. capital, £100 in £1 shares. Mineralogists, chemists, druggists, dealers in minerals, ores, oils, chemical and medical products; consulting and analytical chemists, etc.

United States Helium Production

New Government Plant Commences Operations

SHIPMENTS of helium from the United States Government's new helium production plant, near Amarillo, Texas, began on May 6. The new plant was built and is operated by the U.S. Bureau of Mines at Soncy, on the Rock Island Railroad, about seven miles west of Amarillo. The helium is extracted from natural gas having a helium content of 1½ per cent., produced from the Cliffside structure lying north-west of Amarillo. Gas from 26,000 acres of land is available to the plant through a contract between the Department of Commerce and the Amarillo Oil Co.

The helium-bearing natural gas is transported from the wells to the plant, by the natural pressure of the wells, through a welded steel pipe line eleven miles long. In the plant the gas is cooled to a temperature at which all the constituents except helium are reduced to liquids. The helium is drawn off as a gas, and the liquids are restored to the gaseous state by allowing their temperature to rise to that of the atmosphere. A part of the gas resulting from the evaporation of the liquid is used as fuel to generate power to operate the plant, and the remainder is discharged into a pipe line which carries it to Amarillo, where it is used as domestic and industrial fuel. The process of extracting helium is a continuous one, involving pressures as high as 2,500 lb. per sq. in.

The car in which the first shipment was made is one of two specially built helium tank cars owned by the Air Corps, U.S. Army. It carries helium under a pressure of 2,000 lb. per sq. in. When the car reaches Langley Field the helium will be discharged into other containers for use in the army's lighter-than-air craft, and the tank car will be returned to the Amarillo plant for reloading.

